cp JUN 26 Display

THE RAILWAY GAZETTE

Price Two Shillings #23 FRIDAY, JUNE 5, 1959 Annually £5 by post

UNIVERSITY OF MICHIGAN
JUN 23 1959
TRANSPORTATION LIBRARY

THE ENGLISH ELECTRIC 'DELTIC' DIESEL-ELECTRIC LOCOMOTIVE

'Deltic' 3,300 h.p. locomotives, the most powerful single-unit diesel-electrics in the world, are now on order for British Railways.

For these, British Timken Ltd. have received orders for the Timken tapered-roller-bearing axleboxes, and for traction motor suspension units incorporating Timken tapered-roller bearings.

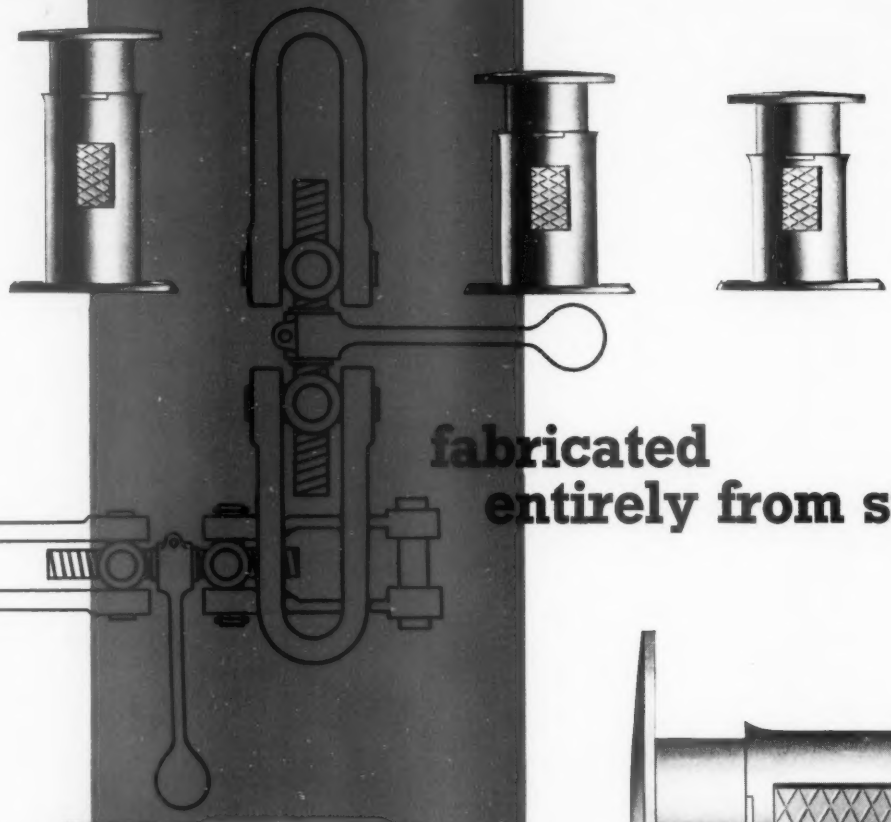
TIMKEN REGD. TRADE MARK

TAPERED-ROLLER BEARINGS MADE IN ENGLAND BY

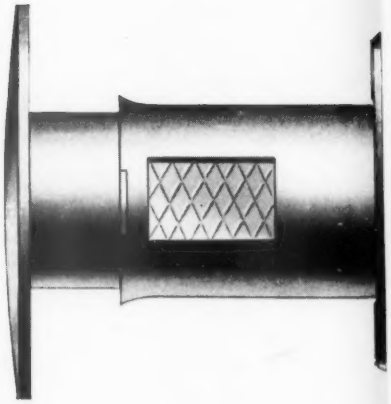
BRITISH TIMKEN LIMITED

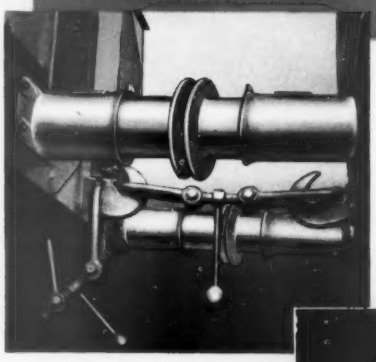
DUSTON, NORTHAMPTON (HEAD OFFICE) AND DAVENTRY, NORTHANTS

FORGED for greater strength



fabricated
entirely from steel





SPENCER – MOULTON
GARRINGTON

GARRINGTONS LTD., NEWTON WORKS, BROMSGROVE, WORCS.

THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
Railway Engineer · TRANSPORT · The Railway News
The Railway Times · Herapath's Railway Journal · RAILWAY RECORD.
RAILWAYS ILLUSTRATED · ESTABLISHED 1835 · Railway Official Gazette

33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1
Telephone: WHitehall 9233 (20 lines) Telegrams: "Trazette Parl London"

BRANCH OFFICES
GLASGOW: 139, Bothwell Street, C.2 . . . Central 1464
NEWCASTLE-ON-TYNE: 21, Mosley Street . . Newcastle-on-Tyne 22239
MANCHESTER: Century Insurance Building, St. Peter's Square Central 7667-8-9
BIRMINGHAM: 90, Hagley Road, Edgbaston . . Edgbaston 2466
LEEDS: 70, Albion Street . . . . . Leeds 27174
BRISTOL: 20, Victoria Square, Clifton . . . Bristol 33873

Annually £5 by post Single copies, Two shillings.
Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.

Editor: B. W. C. Cooke, Assoc. Inst. T.

Vol. 110] FRIDAY, JUNE 5, 1959 [No. 23

CONTENTS

	PAGE
Editorial Notes	637
Railways' Service to Industry	639
Great Northern Railway Board Final Report ...	640
The Scrap Heap	643
Overseas Railway Affairs	644
Thimble Device for Laying Long-Welded Rails	646
Ilford Staff Training Centre	647
Type "2" Mixed-Traffic Locomotives for British Railways	649
Southern Region Cross-Channel Car Ferry ...	652
Personal	653
New Equipment and Processes	654
News Articles	656
Contracts and Tenders	657

TO OUR READERS

We regret that, because of a dispute in the printing industry, to which we are not parties and which involves matters beyond our control, it has been necessary to reduce some features in this issue. The dispute may also result in delay in delivery.

Coal Traffic

BRITISH Railways are not alone in experiencing a decline, which may well continue, in coal class traffic, as the demand for coal and coke decreases. Railways on the Continent are facing the same problem. With the growing use of oil fuels in industry, the general indications are that the amount of coal and coke consigned by rail will decrease. The National Coal Board report for 1958, published last week, states that coal output in Britain in 1958 was 215,800,000 tons, compared with 223,600,000 in 1957 and 224,800,000 in 1954, the highest output since the war. In 1957, coal class traffic originating on British Railways amounted to 152,753,000 tons compared with 173,507,000 in 1954. Coal traffic receipts in the last few weeks have been lower than for the corresponding periods of last year. The recession in industry is partly responsible, but the main cause is the declining use of coal. Total consumption in Britain by all consumers was 202,900,000 tons in 1958, a fall of 4.9 per cent compared with the preceding year. The railways themselves last year used 10,400,000 tons, excluding briquettes, 8.8 per cent less than the 1957 figure. They also bought fewer briquettes. Even where coal is being used in large quantities, as in power stations, these are often sited for direct access by coastal ship. A good deal of coal is now conveyed by road over shorter distances. On the other hand, a return of coal to rail transport from the roads was reported a few days ago to be saving the West Midlands Gas Board about £50,000 a year. Other large consumers who receive their coal by road may find that economies can be achieved in the same way, and revert to delivery by rail. The decline, if it continues, is slow enough to ensure that conveyance of coal will be a major responsibility of the railways for many years to come.

Railway Shopmen & B.T.C. Contracts

A THREAT by the National Union of Railway Shopmen to take strike action unless the British Transport Commission ceases to put railway work out to contract to private firms was made at the union's conference at Southport last weekend. The resolution which was adopted referred to grave hardship and redundancy caused to workshops' staffs by the B.T.C. policy, and also referred to the closing of certain British Railway workshop centres. The delegates at the conference appeared to overlook two very salient points. The first of these is that any redundancy that is arising is not directly attributable to placing work with private contractors but is very largely a result of the change-over from steam to other forms of motive power on British Railways. The second point is that unless orders of this kind are placed with outside contractors, the modernisation plan of British Railways would become impossible of fulfilment. From the point of view of the Commission, as well as of the men, the earlier the modernisation plan is implemented, the sooner will there be a reasonable prospect of greater prosperity for the railway industry.

Combustion Engines Congress

THE Fifth International Congress on Combustion Engines, which will be held at Wiesbaden from June 13-19, will have the largest British party to attend a C.I.M.A.C. congress so far. It was estimated that the British participation will number 160 persons and that 10 British papers will be discussed. Mr. W. K. G. Allen, the Chairman of the British National Committee, told the annual general meeting of United Kingdom supporters last week that the question of C.I.M.A.C. acceptance tests was still under active review by a technical sub-committee, and that completion had been delayed pending agreements on matters of principle. These had centred on the status of C.I.M.A.C. as a standards making body and its consequent relationships with the International Electrotechnical Commission and the International Standards Organisation. The United Kingdom view was that the recommendations would not be effectively covered in one document. It had also made another reservation in connection with the C.I.M.A.C. recommendations. This was that if they were to have the status of an international standard, United Kingdom approval could be done only by the British Standards Institution. Mr. Allen, who was unanimously re-elected Chairman of the British National Committee for the ensuing year, also said that he looked forward to the time when Great Britain would be the host country to the International Congress.

Association of Consulting Engineers

THE report for the year ended April 30, 1959, of the Association of Consulting Engineers states that membership of the Association at the start of the year 1959-60 was at the satisfactory figure of 500. The appendix listing work overseas on which members are engaged includes inspection of German built multiple-unit diesel trains for Burma, the 110-mile Bornu extension of the Nigerian Railway (part of the 400-mile extension to the North East), and design of lightweight coaches for Peru and many railway bridges. Among subjects of reports are the Channel Tunnel, the railway through Swaziland, diesel locomotives for the Sudan, the Peace River monorail scheme in British Columbia, and the proposed underground railway for Caracas, and the railways of El Salvador. As to Britain, it is stated that the British Transport Commission has employed a few firms of consulting engineers on railway modernisation,

and has made tentative enquiries as to the help the Association could give on some major projects in the London Midland Region. It is understood that the Commission's plans have not reached the stage when definite requests for consulting engineers could be made. Investigation is being carried out on behalf of the Ministry of Transport & Civil Aviation of the scheme for a rail link with London Airport. Reference is made to co-operation with the international federations of consulting engineers, F.I.D.I.C. and F.I.B.T.P., in circulating and translating the international conditions of contract for civil engineering works. Amongst losses from death during the year was Sir William Halcrow, Chairman of the Association in 1936-37.

Overseas Railway Traffics

PARAGUAY Central Railway receipts have maintained the improvement shown in the earlier part of the year. Since mid April returns have fluctuated from week to week, but they have been generally higher than in the previous year. At May 15, aggregate receipts were G81,699,574 compared with G80,186,258 in the corresponding period of 1957-58, an increase of G1,513,316. Salvador Railway Company receipts for March, 1959, amounted to colones 273,000 compared with colones 283,000 in March, 1958. The aggregate receipts from July 1, 1958, amounted to colones 2,149,000 compared with colones 2,047,000 in the corresponding period of 1957-58, an increase of colones 102,000. Costa Rica Railway receipts for April amounted to colones 2,419,242 compared with colones 2,124,507 in April last year. Aggregate receipts from July 1, 1958, amounted to colones 20,379,703, compared with colones 18,829,174 in 1957-58, an increase of colones 1,550,529. Results of the Midland Railway Company of Western Australia Limited for the year ended June 30, 1958, show a deficit of £345,707 (£83,791). Fixed assets were £2,530,815 (£2,503,686), current assets £118,175 (£88,807), and liabilities £78,313 (£43,171).

Last Stage of SR Chatham Line Electrification

THE fifth report to travellers in the South Eastern Division of British Railways, Southern Region, by Mr. P. A. White, Line Traffic Manager, published at the beginning of this week, was the last before inauguration of electric traction between Gillingham and Sheerness, Ramsgate, and Dover, the introduction of the new electric service between London and those points, and the bringing into full use of the associated civil engineering and signalling works. A clear explanation was given of the programme for the weekend, which included completion of rearrangement of the track layout in the London area between Shortlands and Bickley, and switching-on of current on the 78 route-miles of newly electrified line. The changeover involved many inevitable cancellations and diversions of trains. Mr. White warned passengers that there might be teething troubles, as there must be when massive engineering works must be carried out and one of the most intensive train services in the world kept running. There was in fact trouble earlier this week in switching on current, but this was soon overcome. There is no doubt that these skilfully written reports, which put the facts plainly before the traveller, have done much to bring about appreciation of the difficulties overcome by the Southern Region in providing many thousands of people with a passenger service of great frequency and considerable speed.

Second Phase of Kent Coast Conversion in Hand

No time is being lost, as Mr. White pointed out, in starting Phase 2 of the Southern Region electrification scheme, which covers the remaining main routes in Kent. They are from Ramsgate to Dover, Sevenoaks to Dover, Ashford to Ramsgate via Canterbury West, Maidstone East to Ashford and Paddock Wood to Maidstone West, more than 130 route-miles. Work so far is being carried out on five of the stations which are to be rebuilt mainly to take longer trains, nine power sub-stations and eight track paralleling huts. Twenty-five miles of electric cable and several miles of conductor rail have been laid. For this second part of the scheme 59 four-car express train sets will be built with 46 two-car intermediate sets. Eleven more powerful electric locomotives will be ordered to make the total 24, and the number of diesel locomotives will be increased to 102. Colour-light signalling will be extended from Higher Green to Dover via Tonbridge and Ashford. It will cover part of the network used by some Kent Coast trains, Hastings diesel-electric trains and principal boat trains. The only stretch of track where extensive earthworks are contemplated is between Folkestone Central and Cheriton, where the line is to be quadrupled. Phase 2 will cut off-peak journeys from London to Folkestone from 111 to 80 min. and from London to Ashford from 81 to 63 min. a remarkable service for a largely rural area.

Withdrawal of Train Services in County Donegal

IN view of the closing in recent months of branches of the former Great Northern Railway of Ireland and of the Sligo, Leitrim & Northern Counties Railway, it is not surprising that goods and passenger trains over the remaining 3 ft. gauge lines of the County Donegal Joint Committee system, including the Strabane & Letterkenny Railway, worked by the Committee are to be replaced by lorries and buses. Announcing this last week, Mr. B. L. Curran, Secretary & Manager of the C.D.J.C. undertaking, is reported to have stated that losses in working during the 10 years to 1958 totalled £137,000, and that it was impossible to raise enough revenue to meet even day-to-day costs of operation. If the Portadown to Londonderry via Strabane line of the G.N.R., now part of the Ulster Transport Authority railways, remains open, the County Donegal lines which connect with it at Strabane might be regarded as feeders useful enough to warrant their retention. The C.D.J.C. is a joint undertaking of the Great Northern Railway Board—which in its turn is responsible to the Governments of Northern Ireland and of the Republic—and of the British Transport Commission as successor to the former Midland and London Midland & Scottish Railways.

St. Pancras—Bedford Diesel Service Plan

DIESEL railcars are being delivered from the Derby Works of British Railways London Midland Region, in preparation for the acceleration beginning next September, of services between St. Pancras, London and Bedford. By the end of this year 30 of the new four-car diesel trains will have been delivered, enough to replace all suburban steam services on that line. Reference was made in our September 12, 1958 issue to this aspect of modernisation in the London Midland Region, which is planned to come into full operation on January 4, 1960. A study of developments in the population of the outer areas served by the route, and of peoples' travelling habits, was carried out before the new stock was designed and before the accelerated timings were decided. Some details of the improvements, which include more frequent services, and journey times shortened by as much as half an hour, are given elsewhere in this issue. The two motor cars in a four-car set each have twin Rolls-Royce 238-h.p. eight-cylinder normally aspirated engines with three-stage torque converters. Fluorescent lighting and a telephone for communication between the driver and guard are features.

No More Named Trains in Switzerland

THE Swiss Federal Railways have decided to abolish names for their passenger trains running within Switzerland. The only titled trains on their system after the summer timetable takes effect next week will be international expresses from and to foreign railways, including some, such as the "Simplon Orient Express," which conveys mainly transit traffic. Apparently the many titles such as "Vigneron" (winegrower) or "Diplomat," which afford little indication of the destination or point of origin, were felt to have become a nuisance. Those of the international expresses running over the S.F.R., such as "Arlberg Orient" are a little better, though few names are more vague than "Nord Express" and "Sud Express." Long distance international trains

presumably must bear titles for purposes of identification and publicity. If named trains carry appropriate boards, as they should do, the placing of these on stock causes difficulties where sets are used for other services. Titles, whether of men or trains, debase the currency when freely bestowed. They are better restricted to a small *élite*.

Stewardesses in Irish Expresses

ONE of the first moves in the renewed drive by Coras Iompair Eireann to attract traffic to the railways in the Republic of Ireland was the formation of a Traffic Development Committee. That body recommended introduction of travelling stewardesses on the Dublin-Cork expresses, two of which each way on weekdays now have stewardess service. The duties include the usual attendance on passengers, especially the elderly and invalids, mothers with families, and unaccompanied children. A welcome feature is the attention paid by stewardesses to the cleanliness of trains. The litter which passengers engender in trains, even although the stock starts its journey clean, is a regrettable accompaniment of travel in these islands. The care taken of children should do much to increase the popularity of railway travel. In catering for young children, railways in Great Britain and Ireland may not have gone to the lengths of some systems, such as the Swedish State Railways which provide special accommodation for babies. On the other hand, their guards have long enjoyed the confidence of those who place unaccompanied children in their care, to an extent known in few other countries. One important duty of C.I.E. stewardesses is to ascertain passengers' views and tastes and pass this information on to the traffic department.

Long-Welded Rails on L.T.E.

THE first long-welded running rails in Britain were installed by London Transport Executive, which first used them in 1936. At the L.T.E. permanent way depot at Lillie Bridge, Fulham, 300-ft. lengths are made up from five rails of the normal 60-ft. length flash-butt welded together. These 300-ft. rails are then taken to the site on special trains and nine of them are joined together *in situ* by special fishplates to make an unbroken length of just over half a-mile. Expansion switches are installed between each half-mile length. Wherever possible, new track in tube or in surface lines laid on London Transport railways since 1938, has been long-welded. Today one-third of the system is laid with welded rails. For various reasons, including curvature, they are not suitable for use everywhere on the Underground system. Current rails, also in 300-ft. welded lengths, are welded on site into half-mile lengths. The use of a thimble device to lay long-welded rails at up to 2 m.p.h., using only five men, is described elsewhere in this issue.

Electrification Progress in Western Germany

INAUGURATION of electric traction between Düsseldorf and Remagen via Cologne has closed the gap between the two networks of the German Federal Railway electrified at 15,000 V. d.c. There is now electric traction from Hamm, through the Ruhr industrial area and up the Rhine to the Swiss frontier at Basle and to the Austrian frontier at Salzburg. Through working at 15,000 V. d.c. is now possible over the German, Austrian, and Swiss Federal Railways between Hamm and Vienna, Geneva, and the Swiss-Italian frontier on the Gotthard line at Chiasso. From that point the Italian State Railways are electrified at 3,000 V. d.c. to Rome and the Straits of Messina, train ferry at Reggio and in Sicily, from Messina to Palermo. Whether the Western German electrified system will be linked in the near future with those of Holland, Belgium, and France is problematical. The Netherlands Railways are electrified at 1,500 V. d.c., the Belgian National at 3,000 V. d.c. and the French National Railways lines in the north and east at 25,000 V. a.c., 50 cycles. Progress in evolving techniques for multi-voltage motive power may hasten the junction of the German Federal with neighbouring electrified systems to afford much-needed acceleration of international goods and passenger traffic.

Railways' Service to Industry

THE several forms of rapid and efficient service which British Railways provide for industry were mentioned by Sir Brian Robertson, Chairman of the British Transport Commission, at the annual luncheon last week of the London branch of the National Union of Manufacturers. The very large amount of bulk traffic of various kinds, generally on a siding-to-siding basis, has long been moved with speed and reliability. This is a service in which railways excel. No other form of transport combines to the same extent speed, punctuality, and the ability to carry in bulk. As he rightly pointed out, there is no indication that consignors of bulk traffics have lost confidence in the railways. The reduced mineral traffic of recent months, for instance, has been due to decreased activity.

As to movement in smaller quantities, with which a large proportion of manufacturers are concerned, the railways provide services which are much better today than they have been for a long time, and are being improved. Transit times are being reduced through rationalisation of goods train operation, helped largely by the new marshalling yards being brought into use and the introduction of diesel traction. Further acceleration will follow with the fitting of more wagons with continuous brakes. One of the most difficult problems is to ensure that handling at terminals is prompt and economical without damage to consignments. In the face of road competition, there must be shown to be efficient door-to-door service. British Railways are better equipped to provide this than they used to be. A wide range of containers is available for a great variety of goods. There are many types of wagon suitable, or specially built, for varieties of traffic, and further types are designed and built as new transport demands are made by users, or are anticipated by railway traffic staffs, and new techniques evolved in construction or use of materials. A very fast overnight container service, for instance, is given between the London and Glasgow industrial areas by the "Condor" service of the London Midland Region.

Rates are competitive. Charges can be quoted which include use of containers, which are particularly suited to wagonload traffic. British Railways's representatives are ready to advise their customers on ways of moving goods by the methods which avoid handling at terminals and minimise damage. Sir Brian Robertson, admitting to the N.U.M. that there will still be some traffics which were better carried by road, observed that railway representatives were encouraged to state frankly when they were confronted with cases of this kind.

The less-than wagonload traffic of British Railways is heavy, amounting to some 4-5 million tons a year on behalf of members of the N.U.M. alone. Much has been and is being done to ensure better handling of this traffic, notably in installing mechanical equipment in depots. The same applies to the parcels service by passenger train.

To secure wagonload traffic is a particularly difficult problem for traffic officers. Much traffic from manufacturers of consumer goods has been lost to the railways and will be hard to regain. Sir Brian Robertson, referring to an article in the May issue of the *British Manufacturer*, in which it was stated that "the railways in this country have completely lost the confidence of industry," felt that there was some truth in it as regards consignment by manufacturers of goods by rail in wagonloads. Producers of consumer goods, he stated, "have become very road minded." One reason he adduced was opposition to nationalisation in principle, which he suggested might sub-consciously affect the potential consignor's attitude to the nationalised railways. But most people who must decide the means of transport are too hard-headed to be so affected. They consign by the means of a transport which seems to give the service they require at the price they are prepared to pay. Railway traffic staffs must ensure that prospective customers know what services the railways can provide, and that the service given is efficient.

A further difficulty facing British Railways in re-gaining wagonload traffic is the growth of "C"-licence transport. Brief reference to Sir Brian Robertson's remarks to the N.U.M. was made in last week's issue. Between 1948 and 1958, he pointed out, the estimated carrying capacity of "C"-licence vehicles over 2½ tons unladen weight increased from 466,000 tons to 1,250,000 tons. During the same period there was very little increase in the carrying capacity of public road

transport vehicles and a reduction, of course, in railway carryings. The "C"-licence lorry competes directly with the "A"-licence lorry offering an exactly similar type of service. Every new "C"-licence vehicle put on the road represents a subtraction from the public transport industry, as regards the large vehicles fit for general haulage work. He expressed his view that if the growth in "C"-licence vehicles continued at the present rate, it would in the end virtually eliminate public transport, public road transport first. It is hard to see, however, how it would be physically possible to move by road, short of building at vast cost many miles of new road, the heavy tonnages, including bulk traffic, now carried by rail. The railways on the other hand, in some cases, offer a type of service with which lorries cannot easily compete.

"Small Deltic" Locomotives for British Railways

AN unusual feature of the 10 Type "2" diesel-electric mixed-traffic locomotives being delivered to the Eastern Region of British Railways by the English Electric Co. Ltd. is the Napier Deltic T9-29 diesel engine. The opposed-piston multi-cylinder two-stroke design is basically similar to the twin engines of the English Electric Deltic 3,300 h.p. locomotive. In the nine-cylinder 18-piston form with pressure charging, as installed in the Type "2" locomotives, the Deltic engine is a compact and efficient prime mover. Maximum rated speed is 1,600 r.p.m. in this application. There is ingenuity in the method of combining mechanical and exhaust-turbine drives for the pressure charger. This should overcome a fundamental difficulty with exhaust-turbo pressure charging, namely that of designing and tuning the system to give optimum results over a wide range of engine speeds. The locomotive is described elsewhere in this issue. Its welded frame and superstructure follow practices established for some years by the English Electric Co. Ltd. and the Vulcan Foundry Limited. The total weight is 73 tons 14 cwt. with train-heating boiler, about 1½ tons greater than the similarly equipped Type "2" locomotives described in our May 15 issue.

The Brahmaputra Bridge

THE Brahmaputra River, which rises in Tibet, follows for about 500 miles on a west-south-westerly course through Assam and Eastern Pakistan before again turning southwards to flow into the Bay of Bengal in company with the Ganges. The last 350-400 miles are in open plains and the river is wide in time of flood. Then, however, proceeding upstream, mountains on both sides of the river approach one another, the Himalayan foothills on the north and the Khasi Hills on the south, and in Assam the river from below Gauhati upwards is more definitely confined. At a point between Amingaon on the north and Pandu on the south bank it is restrained in a comparatively narrow channel by rocky outcrops or high banks.

At that point a wagon-ferry connects the two parts of the North-east Frontier Railway (of India). The line on the north bank approaches from the main portion of the Republic of India via the Assam Link, completed since Partition in 1947. The line on the south bank proceeds to North East Assam. The Amingaon-Pandu defile is the lowest point at which the Brahmaputra could be bridged with reasonable expenditure of money and materials. The work of building the bridge here is now well in hand.

Sited a short distance downstream from the passenger and wagon ferry, the rail and road bridge will consist of 10 spans each of 403 ft. and two 108-ft. approach spans, carrying a double metre-gauge line on its lower deck and a 23-ft. roadway with 6-ft. footways on each side at a higher level. The well-foundations for the piers are being sunk to about 160 ft. below low water level, their curbs being some 30 ft. below mean sea level. The height of the girder bearings will be about 228 ft. above them. Some 3,700 tons of steel and 2,700,000 cu. ft. of cement concrete will be required for these foundations. Work continues 24 hr. a day. Well-sinking on and towards the northern shore is making good progress.

The development of the province of Assam, and notably of its oil resources, is one reason for construction of the bridge. Consideration has been given at many times during the last 50 years or so to building a bridge over the Brahmaputra at or near Pandu, or at one or two other sites. Preparatory work began on the present site during the last war in the course of the Burma campaign. The project was abandoned as not being capable of completion within the short time required, apart from its cost and demands on manpower and materials, and the ability of the Amingaon-Pandu ferries, after completion of additional terminals and introduction of additional ferry flats and towing power, to handle the swollen war-time traffic. After the bridge over the Ganges at Mokameh, opened last month by the Prime Minister of India, Mr. Jawaharlal Nehru, the new structure is the second major railway bridge to be built in India in the past decade.

Great Northern Railway Board Final Report

REGRET at the dissolution of the Great Northern Railway of Ireland, which on October 1, 1958, was partitioned between the Ulster Transport Authority and Coras Iompair Eireann must be accompanied by admiration of the efforts made by the Great Northern Railway Board in the face of insuperable difficulties to provide efficient services and maintain, in so far as the resources allowed, the assets of the undertaking. Much remained of the spirit of the former G.N.R. (I) which for many years, in prosperity and adversity, though never in circumstances so unfavourable as recently, was one of the most efficient and enterprising railway undertakings ever to serve a small country, not highly industrialised.

The final report for the year ended September 30 last, is the fifth submitted by the Board to the Governments of Northern Ireland and the Republic. The board was a joint body, of which the members were appointed by the Minister of Commerce, Northern Ireland, and by the Minister for Industry & Commerce in the Republic. Dundalk Works was leased to the Dundalk Engineering Works Limited, on the understanding that all the work in connection with the construction, overhaul and maintenance of G.N.R. motive power and rolling stock and equipment would be carried out by the company, on behalf of the board. The transfer took effect in January, 1958. Throughout the financial year the railway portion of the undertaking which was worked comprised only the lines between Belfast and Dublin, from Portadown to Londonderry, the Howth Branch, the Antrim Branch, the Cookstown Branch (goods trains only), and the line from Goraghwood to Warrenpoint. All the other lines formerly operated were closed for passenger traffic from October, 1957. On those of them in Northern Ireland the working of goods traffic also ceased from the same date.

Principal results for 1957-58 are as follow :—

—	Total	Apportionment	
		Minister for Industry & Commerce, Dublin	Ulster Transport Authority
	£	£	£
Railways			
Gross receipts 2,893,790			
Working expenses 3,633,308	(Dr.) 659,285	(Dr.) 299,965	(Dr.) 359,320
Hotels and catering	(Dr.) 6,334	(Dr.) 3,733	(Dr.) 2,601
Road passenger	(Cr.) 31,090	(Cr.) 31,090	—
Road freights	(Cr.) 38,502	(Cr.) 38,502	—
Howth Tramway	(Dr.) 10,595	(Dr.) 10,595	—
Balance on working accounts	(Dr.) 606,622	(Dr.) 244,701	(Dr.) 361,921
Joint lines Co. Donegal Railways Jt. Ctte. ...	(Dr.) 11,975	(Dr.) 9,122	(Dr.) 2,853
Miscellaneous receipts ...	(Cr.) 21,578	(Cr.) 6,810	(Cr.) 14,768
Balance (after adjustments) for interest receivable and payment, and rentals and other fixed charges, etc.	(Dr.) 1,103,784	(Dr.) 478,077	(Dr.) 625,097
Balance forward from previous year	(Dr.) 3,958,936	(Dr.) 1,438,662	(Dr.) 2,520,274
Balance carried to balance sheet	(Dr.) 5,062,110	(Dr.) 1,916,739	(Dr.) 3,145,371
Route-miles open, rail		407	
Passenger journeys, rail		7,784,820	
Freight tonnage, rail (tons)		799,946	
Passenger journeys, road		11,109,828	
Freight tonnage, road (tons)		277,220 (excl. livestock)	

In its last year of separate operation, the board incurred a total loss of £1,103,000, an increase of £21,000 on the preceding 12 months. The actual trading loss, amounting to £591,489, was £66,559 less than the corresponding loss in the previous financial year. The improvement, despite the increased rate of wages payable, was due to the closing of lines, intro-

duction of diesel traffic and reduction in the amount of maintenance and renewal work on lines open for traffic.

Throughout the year there was a continuous reduction in business on the railway side, caused partly by closing of lines, to some extent by removal of fuel restrictions which operated during portion of the previous year arising out of the Suez crisis, the falling off in livestock carried, increased growth of private transport and, to an unknown but appreciable extent, by the intensified activities of illegal hauliers.

"The uncertain future of the railways, particularly in Northern Ireland," the report states, "undoubtedly contributed considerably to loss of traffic although it is not possible to indicate its extent. The board was not in a position, it adds, to carry out the duty laid upon it in the Acts under which it came into being. It inherited an undertaking largely run down, and debts of considerable magnitude, but was not provided with any funds of its own. "It had to take over liabilities of a serious nature, and to embark upon schemes for rehabilitation and modernisation without resources, and for which the respective Governments would have had to provide the necessary funds." It could not expend moneys for this purpose without sanction from the Governments, and except for authority to finance the cost involved in provision of additional wagons for cement traffic, for additional diesel railcar units and certain minor items, comprehensive proposals for modernisation of the railway portion of the undertaking which the board had submitted to the Governments, were not approved. Consequently, "it was in an atmosphere of profound uncertainty as to its future, and lack of confidence in the present, that the board had to attempt to deal with the task which it was set. It had been apparent from the outset that in such conditions matters could hardly improve. It is, however, little consolation to the members of the board and to all concerned with the undertaking that this has proved to be all too true."

British Transport Commission Traffic Receipts

PASSENGER receipts of British Railways for Period 5, the four weeks ended May 17, again were disappointing, only slightly exceeding the corresponding figure for last year. There was a gratifying increase in British Railways ships passenger traffics. The great difference between London Transport bus and coach receipts for this period of 1958 and the current year is the result of the bus strike which began on May 5, 1958, and continued well into June.

	Four weeks to May 17, 1959		Incr. or decr.	Aggregate for 20 weeks		Incr. or decr.
	1959	1958		1959	1958	
	£000	£000	£000	£000	£000	£000
Passengers—						
British Railways ...	10,302	9,613	+ 689	46,279	45,307	+ 972
London Transport:						
Railways	1,819	2,043	+ 224	9,103	9,250	− 147
Road Services ...	4,337	2,332	+ 2,005	20,366	19,892	+ 474
Provincial & Scottish buses	4,476	4,391	+ 85	20,812	20,753	+ 59
Ships	381	362	+ 19	1,516	1,426	+ 90
Total Passengers ...	21,315	18,741	+ 2,574	98,076	96,628	+ 1,448
Freight, Parcels & Mails—						
British Railways:						
Merchandise & livestock	7,708	8,510	− 802	37,533	41,966	− 4,433
Minerals	3,244	3,697	− 453	16,920	19,314	− 2,394
Coal & coke ...	8,092	10,193	− 2,101	46,227	52,463	− 6,236
Parcels, etc., by passenger train ...	4,205	4,120	+ 85	20,081	19,907	+ 174
Total Freight, British Railways ...	23,249	26,520	− 3,271	120,761	133,650	− 12,889
Others*	4,379	4,269	+ 110	20,417	20,439	− 22
Total Freight, Parcels, & Mails	27,628	30,789	− 3,161	141,178	154,089	− 12,911
Total	48,943	49,530	− 587	239,254	250,717	− 11,463

* Road haulage, ships, and inland waterways freight.

Railway freight traffics continued at a very low level. Merchandise receipts dropped to £7,708,000, or £802,000 less than for Period 5 of last year. Mineral traffic receipts were only £3,244,000, or £453,000 less than a year ago. The continued low receipts from minerals are a serious matter, more especially as movement of this group of traffics is an indication of industrial activity. Coal class receipts at £8,092,000 were over £2 million less than for the corresponding total last year, which itself was low. It is hard to see how a substitute can be found for this disappearing traffic, once a mainstay of railway revenue. The freight receipts from the other carrying activities of the British Transport Commission exceeded the figure for these weeks of 1958 by only £110,000.

At the end of 20 weeks of the year, the aggregate receipts of the Commission are £11 million below the corresponding aggregate of a year ago. Most of this adverse difference is in respect of British Railways goods traffic. The aggregate increase in passenger receipts over 1958 is small, only some £1.5 million, of which two-thirds was derived from British Railways.

BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS
PERCENTAGE VARIATION, 1959, COMPARED WITH 1958

	Four weeks to May 17	20 weeks to May 17
British Railways—		
Passengers	+ 7.1	+ 2.1
Parcels	+ 2.0	+ 0.8
Merchandise & livestock	− 9.4	− 10.5
Minerals	− 12.2	− 11.4
Coal & coke	− 20.6	− 11.8
Total	− 7.1	− 6.6
Ships (passengers)	+ 5.2	+ 6.3
British Road Services, Inland Waterways and Ships (cargo)	+ 2.5	− 0.1
Road Passenger Transport, Provincial & Scottish ...	+ 1.9	+ 0.2
London Transport—		
Railways	− 10.9	− 1.5
Road services	+ 8.5	+ 2.3
Total	+ 40.7	+ 1.1
Aggregate	− 1.1	− 4.5

American Railroading in 1958

(*By a correspondent*)

WITH each passing year the prosperity of the U.S.A. railroads becomes more dependent upon the volume of freight on miles. In 1958 the railroads operated 220,600 miles in freight service and only 106,920 in passenger service, having ceased in the course of the year to run passenger trains on 5,600 miles of road. Passenger train miles were reduced by fully 10 per cent and the number run over a mile of road each day fell to as low as 11 in the Eastern District and five in the Western.

There cannot have been much wrong with the services, as the average speed for all trains was over 40 m.p.h., while on long runs to the Pacific coast the Santa Fe recorded 50 m.p.h. and the Union Pacific had the highest average speed of 51.7 m.p.h. Despite the excellent railway facilities, most Americans prefer to travel by road or air nowadays. On the recovery of business activity in February this year, passenger revenue was no more than 6.5 per cent of total operating revenues and one-thirteenth part of freight revenue.

On British Railways coaching train miles are nearly two-thirds of total train mileage. On the U.S.A. railroads freight train miles were 61 per cent of the 1958 mileage and, though their total of 400,420,280 was 10 per cent below 1957, were the chief feature of railroad operating. Gross ton miles declined by 134,618 million, or 9.5 per cent, and net ton miles by 69,446 million, or 10.9 per cent, but the output of freight train operation improved as it has done in each post-war year. The railroads worked 60,807 gross ton miles in a train hour, an increase on 1957 of 1,589, or 2.6 per cent. Since 1946 this statistic has been raised by 64 per cent. Over the same period the net ton miles worked in a train hour have increased from 17,173 to 27,148. This rise in output was made possible by an increase in net train load from 1,086 tons to 1,430, coupled with an increase in train speed between terminals from 16 miles an hour to the record height of 19.2.

In 1946 the U.S.A. railroads had a stock of 42,840 locomotive units, including 37,550 steam engines, 832 electric

units and 4,440 diesel units. By the end of 1958 their stock consisted of 1,284 steam engines, 559 electric units and 27,744 diesel units, making a total of 29,587—a 30 per cent reduction. The changeover to diesel power has not only been economical, but has enhanced mobility. Last year the Pennsylvania used diesel power entirely outside its electrified area and improved productivity by 4 per cent, while the Santa Fe, working with diesels in a Western environment, turned out 3 per cent more effective work. Only 5,046,350 steam locomotive miles were worked last year on all lines, the Norfolk & Western accounting for 3,079,700 of the total. It scrapped 55 of its steam locomotives, however, and worked 7,376,760 diesel locomotive miles, which helped to lift its high output of 87,653 gross ton miles in a train hour slightly above the 1957 level. The N. & W. evidently finds that it pays to install diesels, as in the first two months of this year it has cut expenses by 18 per cent and doubled its earnings before charges.

These comments on the performance of the American railroads last year are based mainly on the bulletin of operating statistics which the Bureau of Railway Economics, Association of American Railroads, issued in April. In nine statements, skilfully designed, the bulletin set out the results achieved by the U.S.A. railway system and by 108 individual lines. The survey shows that the railroads strove hard to escape from the precarious situation into which they were thrown by the industrial recession towards the close of 1957. Fortunately they appear to have survived the crisis successfully as they had struggled through many other emergencies in bygone years.

LETTERS TO THE EDITOR

(*The Editor is not responsible for opinions of Correspondents*)

Push-and-Pull Trains

May 22

SIR,—The editorial article under the above heading on page 529 of your May 8 issue states that so far as is known not more than two bogie coaches were ever pushed by the locomotive in this way, and then only on local services.

Before the 1939-45 war, the local passenger services between Swansea, Victoria and Pontardulais on the London Midland & Scottish Railway were worked by push-and-pull trains. While these were normally worked by a Class "2FT" ex-L.N.W.R. 0-6-2 locomotive and two coaches, the trains were frequently strengthened by the addition of a third coach. The sight of three coaches being propelled from Pontardulais to Swansea was not unusual.

Yours faithfully,

M. B. LEWIS

Cobo, 26, Beresford Road, Reading

Withdrawal of Passenger Services

May 18

SIR,—The Yorkshire Area Transport Users' Consultative Committee was reported in the daily Press on May 14 to have stated that there were insufficient grounds for opposing withdrawal of the unremunerative passenger trains between Penistone, Barnsley Court House, and Doncaster Central. On the same day I bought a copy of the forthcoming summer timetables of the Eastern Region, wherein this service is shown as having been withdrawn. These timetables are not produced overnight, so that the British Transport Commission must have been determined to withdraw the service, whatever the Transport Users' Consultative Committee might say on the matter.

This shows up what many have been thinking for a long time despite what has appeared from time to time in your journal and in the explanatory pamphlet issued by the Central Transport Consultative Committee; namely, that if the Commission desires to withdraw a particular service, it will ultimately do so, whatever anyone else may do or say, the T.U.C.C. being merely the rubber stamp for the Commission's proposals, or the wool to be pulled over the public's eyes. That the service is unremunerative is beside the point. It is the principle which is at stake.

No service is likely to pay its way if trains are not run at the times desired by the public. As to the Penistone-Doncaster service, has any attempt been made to provide a service more in line with the needs of the travelling public, or is the B.T.C. having too good a time with its share of the revenue of its associated bus companies operating in the district and does not wish to rob Peter to pay Paul ? This may be the reason for the threatened closure of the Hope Valley line stations or for the withdrawal of the Nottingham Victoria to Surtton-in-Ashfield service.

Yours faithfully,

D. J. WORRALL

27, Nether Edge Road, Sheffield, 7

Kent Coast Electrification

May 21

SIR,—Much has appeared in the Press recently concerning the Southern Region electrification to the Kent Coast, stating, amongst other things, how well up to schedule it is. Perhaps so, but progress has been poor compared with pre-war schemes.

The Portsmouth electrification was begun about Christmas, 1935, and was complete by the summer of 1937, including the Durnsford Road flyover and re-arrangement of tracks from there to Waterloo. In a little over six months electric trains had reached Woking, and by early 1937 the service to Portsmouth already was partly by electric train.

The Kent Coast scheme has been in progress for about two years. Full-scale trials started only recently, and so far as I am aware no fare-paying passenger has been carried. Much of the colour-light signalling and re-arranged tracks has yet to be brought into use. Doubts also have been expressed as to whether all the new rolling stock will be available in time for the opening on June 15.

Yours faithfully,

J. B. LATHAM

Channings, Kettlewell Hill, Woking

[Circumstances, including costs, were very different in 1935-37.—*Ed. R.G.*]

The American Railroad Position

May 26

SIR,—The statement of U.S.A. railway revenues and expenses for the first quarter of this year confirms all that has been said recently in your columns about the upward trend in railroad business this year. By March 31 freight revenue increased by $126 million, or 6.6 per cent, and passenger revenue by $1.4 million. Mail, parcels and miscellaneous receipts were all well above 1958 figures, so that total operating revenues of $2,390 million were $150 million above last year's level, an advance of 6.7 per cent, operating expenses were $35 million, or nearly 2 per cent, higher, but earnings before charges were up nearly $70 million, or 82 per cent.

Only 21 companies were in deficit at March 31, against 33 a year ago. The Pennsylvania converted a deficit of $8 million into a net railway operating income of $461,100. It serves more steel mills than any other railroad and should benefit from their greater output in the second quarter of the year. Meantime the Norfolk and Western, in which the P.RR. has a large investment, performed the remarkable feat of increasing its earnings by $5,488,000, or 90 per cent. The result was due to a cut in operating expenses of over $6 million, or 16 per cent, which justifies the changeover from steam to diesel motive power on this famous coal road. Its operating ratio at March 31 was 63.4 per cent against 79.1 per cent last year, while the operating ratio for the U.S.A. railroads as a system was 79.9 per cent, compared with 83.7 per cent for the first quarter of 1958.

Yours faithfully,

R. BELL

Clacton-on-Sea

THE SCRAP HEAP

Swan Stops Trains

A swan held up the train service between Norwich and Lowestoft for half-an-hour when it became entangled with the mechanism of Reedham swing bridge. Mr. Charles Partridge, the stationmaster at Reedham, freed it uninjured. — *From the "Evening Standard."*

Up the Underground !

It is difficult to think of tubes and underground trains in the terms of the emotional fervour which attaches itself to steam engines, yet the diving down into burrows like the White Rabbit, and, again like him, usually anxiously consulting a watch, and emerging a few moments later at a destination miles away is by no means without its romantic side. . . . It would be pleasant to report that Londoners are passionate for, say, the Northern as against the Bakerloo or the District as opposed to the Piccadilly lines. A sequel to "The Napoleon of Notting Hill" might well be written on this noble subject, ending with an ultimate clash of men and machines at, to choose a suitable station, Barons Court. . . . When Gilbert wrote of a "tuppenny-tube young man" the whole context was redolent of cheerfulness, and if it is, perhaps, a mistake to use, as young people have, the Inner Circle as a kind of private bar that keeps conveniently travelling round and round, the basic idea of regarding tube-travelling as a treat has much to commend it.—*From "The Times."*

Locomotive Equipped with Lifebelt

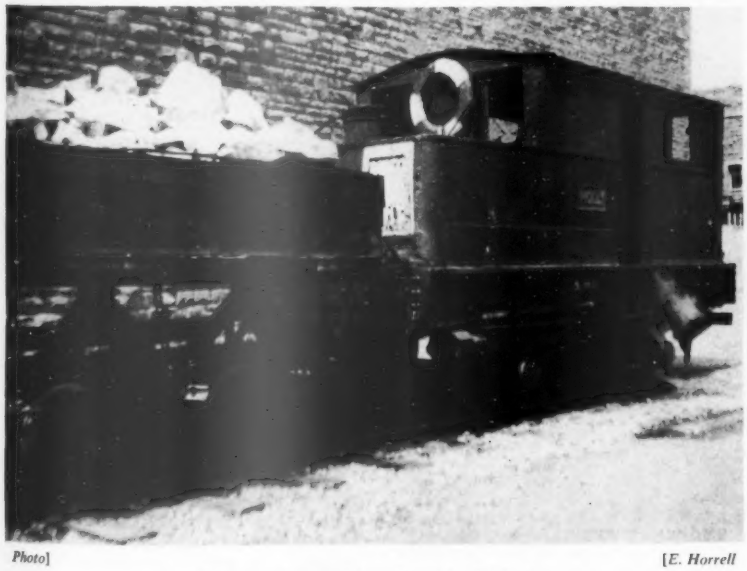
The Sentinel steam locomotive shown in the accompanying illustration, worked until recently a two-mile standard-gauge railway operated by the Admiralty on the island of Alderney. The line conveys granite from a quarry to the end of the Admiralty Breakwater, where it is tipped on the seaward side as reinforcement. A reader states that heavy seas often break over the line on the breakwater, which is the reason for the lifebelt on the cab. The line is now worked by a Ruston & Hornsby diesel locomotive.

The only public railways in the Channel Islands were the Jersey Railways & Tramways and the Jersey Eastern, both of which were closed some years ago, as was the electric tramway in Guernsey.

Early Hydraulic Buffer

Early use of a hydraulic terminus buffer is referred to by a correspondent, who states that the use of water to provide the cushioning effect was first thought of by Sir John McNeall in 1854 when he devised what were termed plungers, to be built in beneath the platform of the Belfast & County Down Railway terminus at Belfast. The buffers consisted of two cast-iron cylinders 10 ft. long, into which the 3-in. dia. buffer plungers fitted. A long snake spring kept the buffers extended. The space in the cylinder behind the plunger was filled with water through a fill-and-escape pipe only ½ in. in dia. When the train hit the buffers, the water was forced out gradually through the small pipe. One difficulty seems to have been that it proved impracticable to anchor the plunger cylinders sufficiently firmly. The buffers are stated to have been in use for only nine months.

[Practical use of the hydraulic buffer is generally regarded as having begun with the invention of Alfred A. Langley, of Derby, in 1882. Hydraulic buffer stops with 4-ft. stroke were introduced in that year at Liverpool Street and Fenchurch Street Stations, G.E.R., and similar buffers, but with 2-ft. stroke, at the new Manchester Exchange Station, L.N.W.R., in 1885. Langley gave a paper on the subject to the Institution of Mechanical Engineers, reported in our constituent journal, "*The Railway Engineer*" for March, 1886. In the ensuing discussion it was pointed out that hydraulic buffers adopted the general principle already used for some 14 or 15 years in controlling recoil in large guns. Both Sir William Siemens and Sir William (later Lord) Armstrong gave detailed attention to that aspect of hydraulic resistance to shock.—ED., *R.G.*]



Photo] [*E. Horrell*

Locomotive equipped with lifebelt.

Home James, and Don't Spare the Horses

When I was a shunter with the Great Central Railway in 1905, we had a popular midnight train to Aylesbury. It was my duty to bring the empty train to Marylebone and stay until the train was safely away. One night a hansom came galloping into the station. A man got out in full evening kit and asked: "Where is the Aylesbury train?" The inspector said: "I am sorry, sir, the Aylesbury train has gone." The man said: "Well, I am going home *tonight*. I will have a special." We took him to the booking office and he paid five golden sovereigns and first class return fare to Aylesbury. I was sent to bring a first-class brake and engine from the yard and he got into his train. We put fast train headlights on, and the train crew were told: "You're fast to Aylesbury." The signalman at Chorleywood had got the 12 o'clock at his station when he received the "special train" signal. He put the train in a siding for a few minutes to let the special pass and the man who missed his train got home long before the others. Those were the days when a railway inspector had authority to act without asking anyone else.—*F. S. Bradley* (48 *years a railwayman*), *in the "Evening News"*

Do-it-Yourself Railway

Curicus how these correspondents
Writing to the "*Daily Wail*"
Banish B.T.C. despondence,
Show us where the railways fail.

Have you seen the bright suggestion
How to make the railways pay ?
Tal-y-llyn, the line in question
Shows the profit making way.

Take a tip from narrow gauges,
Those the Railways Act forgot.
They don't pay the staff their wages.
Keen supporters run the lot.

Picture then each poor commuter
Giving up his holiday,
Going down the line by scooter
Just to mend the permanent way.

Every season ticket feller
Works each Sunday all for nix,
Bowler hat and rolled umbrella
Laid aside for spades and picks.

Then on Monday at the junction,
If his train should give a jolt,
He can say without compunction,
"That is where I shot the bolt."

A.V.D.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

VICTORIA

Withdrawal of Restaurant Cars

Restaurant cars attached to Horsham and Warrnambool line trains have been withdrawn from service because of the continued operating loss. The facilities have been replaced by a light refreshment trolley service. The "Moyne" and "Kiewa" cars used for the special restaurant service have been reverted to first and second class sitting cars to aid the railway programme to provide seat-booked air-conditioned cars on all main-line passenger trains.

Dynon Freight Terminal

With the opening of the rail freight terminal at South Dynon for goods dispatched from Sydney to Melbourne on April 6, the Montague Shipping Shed is being used exclusively for cargo from overseas vessels, berthing at Port Melbourne. Previously all general merchandise rail traffic from Sydney was delivered at Melbourne through the Montague Shipping Shed, which also handles inwards cargo from overseas vessels. Concentration of all general merchandise traffic from Sydney at South Dynon will be convenient for many carriers and consignees. Additional rail haulage involved in routing trains along the Viaduct to Jolimont, and thence to Port Melbourne, is avoided.

Hopper Wagon for Wheat Traffic

A new 25-ton capacity hopper type of covered wagon for wheat traffic, capable of being unloaded in no more than 2 min., was demonstrated successfully at the Newport Siding of W. C. Thomas and Son Pty. Ltd. recently. The prototype van was designed by railway engineers and constructed at Newport Workshops. It followed investigations to speed-up the discharge of bulk wheat consigned by rail.

Wheat is loaded through top hatches and discharged through a centre bottom hopper into a silo pit below rail level. The advantages of the prototype van are that it saves manpower and time. Whereas it takes three men, operating power shovels, from 20 to 25 min. to empty the existing "GY" wheat wagon, the hopper wagon is emptied by one man. All he has to do is to operate a valve, and the discharge of wheat follows automatically.

Gippsland Line Duplication

A further stage of Gippsland line duplication has been completed. The island platform at Pakenham has been brought into use enabling the present double tracks on either side of the station to be connected to provide continuous duplication from Berwick to Bunyip.

AUSTRALIA

Transcontinental Removals Service

With the co-operation of the Commonwealth Railways, the Sydney removals concern of Grace Bros. Pty. Ltd. has speeded up its regular 3,000-mile shuttle service between the eastern and western sides of the Australian continent by practically two days with the aid of rail transport.

When one of the company's pantechnicons reaches Port Augusta in South Australia, it is now loaded on a train of flat wagons and carried some 1,000 miles to Kalgoorlie in West Australia. The railway runs in a straight line for many hundreds of miles across the arid Nullabor Plains without tunnels or bridges, whereas the road follows a circuitous route near the coast and is a road in name only, parts being wiped out by sandstorms and floods.

The cost involved for this 1,000-mile rail trip for one of the 1,480-cu. ft. Leyland pantechnicons is £A120. The driver travels in accommodation at the rear of the train for a charge of £8 10s. 5d.

Leyland pantechnicon, of 1,480-cu. ft. capacity, loaded on a Commonwealth Railways bogie bolster wagon

NEW ZEALAND

East Town Marshalling Yard

A new flat marshalling yard at East Town, near Wanganui, in the North Island, was brought into use on May 3. There are two arrival tracks and six classification sidings with capacities ranging from 54 to 87 wagons. In addition there are sidings for loading of wagons and delivery of goods, locomotive turning and fuelling facilities, and storage sidings for wagons awaiting repair at the near-by East Town workshops.

Coincident with the opening of this new yard, a revised goods train timetable came into operation on the New Plymouth-Marton line. No longer is it necessary for much of the through goods traffic to be hauled over the three-mile branch line to Wanganui and back again. Shunting services now handle all local traffic between the East Town yard and the various loading and delivery points along the Wanganui and Castlecliff branch lines.

Four through goods trains each way daily are scheduled through the yard, together with the local services and an additional working westward to and from New Plymouth. South of the yard, the ruling grade is 1 in 70; to the west, the ruling grade is 1 in 35. The new yard is strategically located to handle the necessary adjustments to the loads of trains.

UNITED STATES

Teleprinter for Wagon Records

To expedite the classification of more than 50,000 daily reports on wagons in movement the Illinois Central Railroad has installed a teleprinter which can transmit 600 words a minute, compared with the 60-100 words a minute of teleprinters generally used by U.S.A. railways. Information on the make-up of trains, including wagon numbers, is teletyped from various places and received on perforated tapes in the I.C.R.R. communication centre in Chicago. Tapes are then fed into the new teleprinter circuit and reproduced in the Accounting Department office building seven miles away at 600 words a minute. The information is then transferred to punched cards by means of International Business Machines data - processing equipment. Wagon numbers arranged in numerical order pass through a printer which makes a record in page form showing number, identification initials, routing, location, and load of the wagon. The new installation extends at present over about half the Illinois Central system. It is

a further step to facilitate answers to inquiries about consignments by railway users. The same information will also be used in the wagon accountant's office.

CANADA

Piggyback Services on the C.P.R.

Complementary to diesel - traction, piggyback services on the C.P.R. are extending rapidly, a measure of the popularity, speed, reliability and economies conferred by them on inter-city services. Already they are available on some 6,000 miles of the system and are connecting 21 cities. For their operation about 540 special flat wagons fitted with roller-bearings are now running and a further 300 are on order. To ensure expeditious handling of the trailers, new terminals have been provided with special equipment.

C.P.R. Transcontinental Air Service

At the beginning of May the C.P.R. inaugurated its transcontinental air service between Montreal, Toronto, Winnipeg and Vancouver with Bristol Britannia turbo-prop. aircraft. At present the Government has licensed only one service each way daily, but it is hoped that this will be augmented.

ALGERIA

New Standard-Gauge Line

A new 28-miles standard-gauge line of the Algerian Railways was inaugurated on April 23, between Perregaux and Mostaganem, connecting the port of Mostaganem with the Algerian Railways' main line from Algiers to Oran. The first 10 miles of the new line northwards from Perregaux are of mixed gauge, shared with the narrow-gauge service from Oran to Colomb-Bechar. The new line replaces the two narrow-gauge sections La Macta - Mostaganem (19 miles) and Relizane-Mostaganem (47 miles), which have been closed to traffic from the same date.

ITALY

More " Couchettes " Used

Additional *couchette* services were introduced on June 1, because of the favour this facility has found with the public, and the number of *couchette* services is to be gradually further increased.

Fast Goods Trains

Fast goods trains have been running on main lines since June 1. Officially known as *rapidi speciali*, they are intended to reduce transit times for full wagon-loads between principal towns. Wagons loaded in the late afternoon will, over medium distances, be at destination in the early hours of the following morning, or, over some longer distances, during the afternoon of the following day. Examples of transit times are: Turin-Venice, 261 miles, 8 hr. 26 min.; Milan-Rome, 392 miles, 9 hr. 20 min.; Milan-Palermo, 1,019 miles, 44 hr. 17 min.; Genoa-Rome, 305 miles, 9 hr. 39 min. The Bologna-Rome fast goods, leaving Bologna at 10.53 p.m. and Florence at 1.47 a.m., will connect at Rome with the Milan-Sicily train leaving Milan at 11.28 p.m., enabling wagons from north-east Italy to be attached for destinations south of Rome.

SWITZERLAND

Breakdown Vans

Five new breakdown vans have been put in service by the Federal Railways, similar in type to those stationed already at Lausanne, Olten, and Zurich. Four have been allocated to Berne, Biel, Bellinzona, and Winterthur.

High Speed Tests

In preparation for the Paris-Milan T.E.E. service, which will pass through Switzerland between Vallorbe, Lausanne, Brigue and Domodossola at a higher speed than any previous Swiss schedule, tests have been conducted recently between Martigny and Sion with an electric motorcoach of the RABFe type, No. 1041. Speeds up to 100 m.p.h. were attained on the straight and level stretch between Martigny and Ardon, and the behaviour of the pantographs at this speed was closely studied. Speeds up to 80 m.p.h. are now common on this section of the Simplon main line.

FRANCE

Shunting Tests for Steel Sheet

The National Railways recently staged at Achères, a series of shunting tests of wagons loaded with steel sheet. This traffic has been the source of much damage to rolling stock because of the difficulty of securing adequately such heavy traffic against movement caused by shocks in shunting. Nine different methods of packing and securing steel sheet were tested. Each of the nine wagons was shunted three times, to produce striking speeds respectively of 3-4 m.p.h., 4-5 m.p.h. and about 6 m.p.h. The speeds were checked by an electric device on the track. Of the nine methods tested, only one failed to give satisfactory results.

Sliding-Side Pallet Wagon

The Société Nouvelles des Ateliers de Vénissieux (SNAV) has built a prototype covered wagon for transport of pallets. The sides consist entirely of sliding doors. The doors, running in longitudinal guide rails, can be moved to enable up to half the side at any point to be completely free for loading. To prevent movement of the doors being blocked by packages, the lower set of guide rails can be moved by levers at each end of the wagon approximately 6 in. outwards, which should be sufficient to release them. This movement is necessary when the doors are to be opened. At other times the doors are all locked in alignment, which enables them to be made water-tight.

Built to the dimensions of the standard O.R.E. covered wagon, S.N.C.F. standard box pallets can be loaded in seven rows three abreast and two high, a total of 42 pallets.

New Goods Station at Orléans

After the war, the goods station at Orléans consisting of a goods shed, an open loading bank and some 1,200 yd. of sidings, was temporarily reconstructed on its pre-war site, west of the Paris-Orléans main line. Most of this site and that of the passenger facilities, required later for town planning purposes, and a new site was allocated east of the main line. Construction was recently completed. The new goods station including a goods shed with a floor area of some 6,500 sq. yd. facing northwards to reduce summer heat, four covered tracks taking 38 wagons and further yard capacity for 90 wagons, a special yard and shed for groupage traffic, and staff welfare facilities.

WESTERN GERMANY

Signalling on Kostheim - Wiesbaden Line

The capacity of the line between Kostheim, near Frankfurt, and Wiesbaden East station is being appreciably increased by the provision of relay interlocking apparatus at Kostheim, Mainz Kastel, and Wiesbaden East, with some additional automatic signalling and modifications to existing equipment. When complete the work will involve 144 sets of points and 61 signals and seven signalboxes will be replaced, though their buildings will be used to some extent to house the new apparatus and so reduce installation costs. The new boxes have to deal with some 1,000 running and 400 shunt movements daily. Carried out by Siemens & Halske A.G. this work completes the re-signalling of the whole line from Hochheim and Bischofscheim (Mainz) to Rüdesheim.

" Universal " Type Sleeping Cars

The German Sleeping Car Company (D.S.G.) has placed in service 20 sleeping cars, with " universal " compartments that can be sold either as single-, double-, or three-berth compartments. The cars are air-conditioned on the Jettair system and will run in the services Dortmund-Munich, Kleve - Munich, Dortmund - Zurich, Dortmund-Interlaken, Hamburg-Stuttgart, Hamburg-Munich, Hamburg-Basle, and in the " Komet " service from Hamburg to Zurich.

BELGIUM

Electrification Extension

Electric traction has been introduced on the Namur-Charleroi and Gembloux-Onoz-Jemeppe sections. Two other lines scheduled for conversion, Brussels-Mons and Landen-Hasselt, are due for coms pletion in 1961. The National Railwayc are to obtain five multi-voltage electrig locomotives for eventual through runninh between the Belgian (3,000V), Dutcn (1,500V) and the 50-cycle electrificatio-in Northern France, on the Paris-Amsterdam through services.

Thimble Device for Laying Long-Welded Rails

Laying up to 2 m.p.h. with team of only five men

Roller thimble travelling, with crane on same road, and rail in raised position, being guided over insulators allowing rail in rear to drop into insulators

LONDON TRANSPORT has introduced a thimble device which, attached to a crane hook, enables 300 ft. lengths of welded rail to be installed rapidly and easily by a small labour force. Laying speeds of up to two miles of single rail an hour can be achieved.

The device consists of two 2½ in. dia. rollers, each 9 in. long, mounted between side plates. The rollers are at 10 in. centres on the same horizontal plane and rotate in roller races housed in the side plates.

The two ¾ in. thick vertical side plates are 15 in. high, 17 in. wide at base, and taper from this width to 8 in. in the top 8 in. of their depth. The plates are held apart at their base by steel distance pieces. At the top, a fabricated steel block floats between the inside faces of the side plates and rests on suitable stops. The fabricated block is fitted with a swivel eye for hoisting purposes. Two lips, one each side of the fabricated block, are located under 1 in. dia. pins passing horizontally through the two side plates. Each pin is fixed in the side plates by a formed head at one end and a gib key at the opposite end.

The whole device, therefore, can be raised by crane. The weight on the rollers is transferred through the two 1 in. dia. pins to the lips of the fabricated block containing the swivel eye.

The new conductor or running rails to be laid are shop-welded into 300 ft. lengths and are off-loaded into the 4 ft. way from rail-carrying trains by the usual method of chaining down one end of the rail and then drawing the train forward so that the rail is pulled from the wagons to the sleepers in the position where it is required for erection. Conductor rails are then site welded into longer lengths, usually of half a mile.

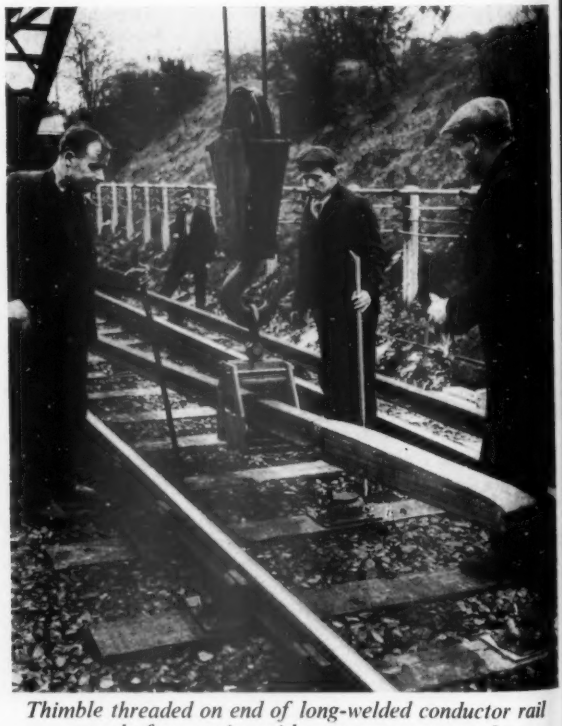
Laying Procedure

With the new method of installation, the end of the rail, previously off-loaded at the site as described, is jacked up and the thimble threaded on it. The crane is then reversed and travels slowly backwards over the length of rail in question, feeding it through the thimble. The jib is so positioned as to place the rail in the negative or positive insulators as required.

Three men with bars follow the crane, guiding as necessary to ensure that the

(*Continued on page 648*)

Roller thimble used by London Transport for installation of long-welded rails, showing fabricated block



Thimble threaded on end of long-welded conductor rail ready for erection with crane on same road

Ilford Staff Training Centre

Training facilities for operating and maintenance staff of the Eastern Region

Exterior of common room during break

BRITISH RAILWAYS, Eastern Region, has recently opened, at Ilford, Essex, a staff training centre and hostel, capable of training 1,000 men a year. It has been built to provide adequate and up-to-date instruction for staff who maintain and operate diesel locomotives, signalling, and mechanised office and accounting equipment.

Details of the training are the responsibility of the departmental officers, and the instructors are attached to the respective departments. The wider aspects of policy are decided by the Establishment & Staff Officer of the Eastern Region, Mr. C. S. McLeod, and his assistant, Mr. A. L. Crewe. Training is thus departmental, but subject to central co-ordination. At present four courses are available, but it is intended to introduce others later.

Signal Engineering Courses

Courses in signal engineering last 13 weeks, and cater for 26 trainees. They cover the various sections of the Signal Engineer's Department. At present it includes mechanical and electrical signalling, and later, will take in telecommunications. Practical training is provided for maintenance staff and potential supervisors. It is hoped also to arrange technical courses for new entrants to the drawing office, as well as special courses for supervisors and advance refresher courses for senior supervisory staff. The classroom training is supplemented by the showing of films and filmstrips. Arrangements are made for visits to outside installations. It is intended to provide a full size route relay interlocking system. The present apparatus includes a selection of typical signal relays, block apparatus, single-line token instruments, and telephones. There is a model track around three sides of this classroom.

Operating Courses

Traffic operating courses, for 10-15 men, last for 2-5 weeks. Signalling & Rule Courses are held for new entrants into the guards' and shunters' grades. Further courses will be arranged for new entrants to the signalling grade, and refresher courses for men already in those grades, who seek promotion. Block instruments are provided, wired to represent three successive signal boxes, A, B, and C. At B, a switching-out control is arranged, so that this box may be closed, in accordance with regulations, and through working established between boxes A and C. A novel feature of this classroom is a metal black-board. Magnetic symbols, representing signals, obstructions, train-on-line, and so on, can be positioned by the instructor to reproduce any required operating situation. The " train " can be moved along the black-board as the sequence of signalling operations takes place.

Commercial Courses

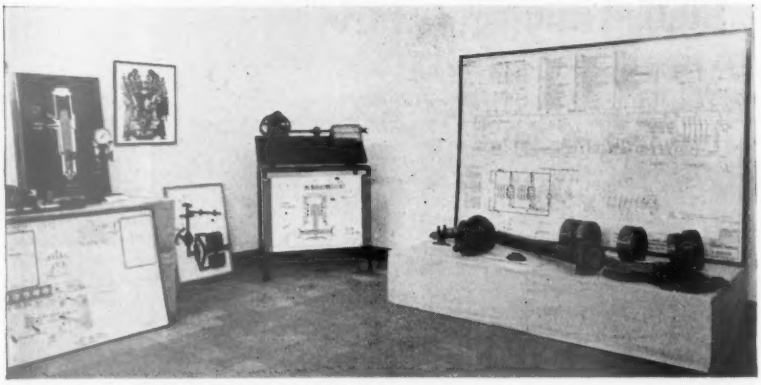
Traffic commercial courses, at present, are for 16 students and last for four weeks. They are for new entrants to the clerical grade, and provide basic instruction in all phases of goods and passenger station working and accounts. It is also the intention to arrange for two-week refresher courses for the benefit of National Servicemen returning to the railways. This classroom includes a small booking office equipped with various ticket issuing and printing machines, in addition to the usual ticket racks.

Motive Power Courses

One-week Motive Power Courses at present cater for 36 diesel drivers. They provide training of footplate staff on the theory of diesel locomotives and diesel railcars, and give theoretical training, before practical instruction in the districts. Each course is planned to give instruction on a particular type of main-line locomotive. Subsequent training on other types of locomotives is given in the districts. The same procedure applies to the diesel railcar courses. It is probable that the school later will provide classroom training in diesel traction for artisan staff.

The school was built on the Derwent system of pre-fabricated construction, similar to that used in the building of the

Traffic operating lecture room



Corner of diesel apparatus room

adjoining staff hostel, in 1956. The school accommodates approximately 100 students.

There are nine well-lit and ventilated teaching rooms. Six of these are for use as normal lecture rooms. In addition there is a room specially equipped for showing training films and which also may be used for the evening entertainment of the hostel residents. There are common and staff rooms with the usual cloakroom facilities and a small kitchen equipped for the making of coffee and tea.

The use of a colour scheme, in which green, grey and yellow are prominent, combines with comfortable furnishings to produce an impression of cheerfulness and light.

Student Accommodation

The school is not residential, as about half of those attending travel daily from their homes. Where necessary accommodation for students can be provided in the hostel. Meals for all students are served in the dining room at the hostel, and light refreshments in the common rooms.

The building was designed in the office of the Architect, Eastern Region, under the general direction of the Chief Civil Engineer, Eastern Region. The main contractor was Bovis Limited, of London, and the principal sub-contractor was Vic Hallam Limited of Nottingham, who supplied and erected the prefabricated superstructure.

Staff

Training staff is responsible to Mr. W. Young, Warden, of the Training Centre. The Senior Instructor, Diesel, is Mr. A. Punter; the Senior Instructor, Signal Engineering, is Mr. F. Cobb; the Operating Instructor is Mr. W. A. Tee; and Commercial Instructor, Mr. W. Hearman. The hostel is the responsibility of Mr. A. T. S. Rayner, Regional Welfare Officer. The Hostel Manager is Mr. W. Horsefield.

All the above are responsible to Mr. C. S. McLeod, Establishment & Staff Officer, Eastern Region.

Demonstration booking office adjoining commercial lecture room

Thimble Device for Laying Long-Welded Rails

(*Concluded from page 646*)

rail drops into the insulators. Two other men go ahead of the work to remove the screws which have been used temporarily to hold down the laid out rails to the sleepers, and to square up the insulator caps to receive the rails.

Rate of Progress

The rate of progress with this labour force of five men on the ground is up to 2 m.p.h. The method is reported to have proved very successful, with ease in installation and no damage to insulators. To guard against breakdowns, the thimble device is so designed that it can be quickly detached from the rail by removing the gib keys and 1 in. dia. pins. The method can be applied equally to the installation of running rails, the crane working from the adjoining road to drop the rails in the chairs or baseplates.

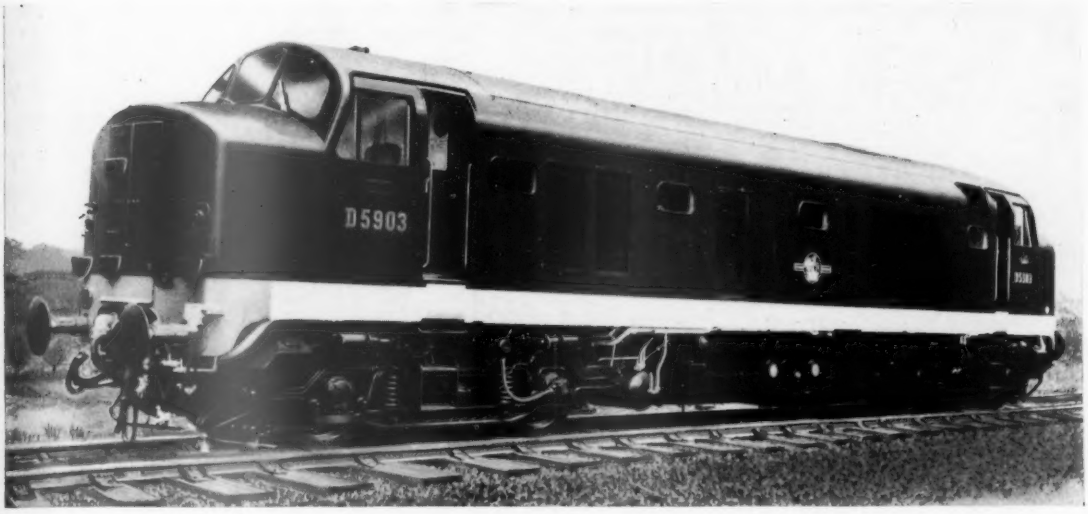
The device was designed by Mr. H. Chanter, Permanent Way Engineer, to the requirements of Mr. C. E. Dunton, Chief Civil Engineer, London Transport Executive and was manufactured in the Chief Civil Engineer's workshops at Lillie Bridge.

SOME STEEL TO BE CHEAPER.—In a move to encourage bigger orders, the Iron and Steel Board is reducing the prices of steel ordered in large quantities. The reductions, which come into force on June 1, amount to about £1 a ton, or 2 per cent., and apply to quantities of 10 tons and upwards (larger quantities for certain products), ordered to one specification for one delivery to one destination. The board believes that savings could be achieved both in mill costs and in transportation if the size of individual orders were increased. At present many of the small orders are said to be uneconomic. In general, no reductions are being made for quantities under 10 tons. There are increases for certain small quantity orders, and some size and quality extras also are being increased. The zone extras on basic pig iron are reduced, as are the maximum prices of hematite and low phosphorus foundry pig iron. Reductions for larger quantities, it is stated, should help to strengthen the competitive position at home and abroad of those consumers who take advantage of them. No further changes in the general level of iron and steel prices determined by the board, up or down, are in prospect.

MONORAIL FOR SEATTLE EXHIBITION.—A monorail train capable of reaching a speed of 60 m.p.h. within 15 sec. is to be built to carry passengers along Fifth Avenue, Seattle, to the 74-acre site of the "Century 21" exhibition, which is to be opened in 1961 for a period of two years. Financial details of a contract are being discussed between the Seattle Transit Commission and the Lockheed Aircraft Corporation, who will produce the monorail. The trains will carry 96 passengers for a distance of nearly a mile in less than a minute to the site of the exhibition, the theme of which is to be "man in space." The system is expected to pay for itself during the two-year exhibition.

Type "2" Mixed-Traffic Diesel-Electric Locomotives for British Railways

Bo-Bo design powered by single turbo-charged Deltic nine-cylinder engine



Latest of the Type "2" British Railways locomotives, one of six "Small Deltics" already in service on the Great Northern Line

THE first six of the 10 Type "2" 1,100 h.p. diesel-electric main-line locomotives ordered by British Railways from the English Electric Co. Ltd., are in Traffic and carrying out crew-training duties on the Great Northern Line of the Eastern Region. As mentioned in last week's issue, the locomotives are designed primarily for short-distance passenger train working, and are to be used for the outer and inner suburban services operating from Kings Cross, Moorgate, and Broad Street. Although they are geared for a maximum speed of 75 m.p.h. the locomotives will be used also on local freight services. The series is being numbered D5900 to D5909.

The design and construction is by the English Electric Co. Ltd. in conjunction with its associates, the Vulcan Foundry Limited and D. Napier & Son Ltd.

Locomotives of this series may be operated in multiple unit with each other or with the majority of Types "1," "2," "3," and "4" already in service and coming into service on British Railways.

Leading particulars are as follow:—

Wheel arrangement	Bo-Bo
Weight in full working order (adhesive)	73 ton 17 cwt
Maximum axle load	18¼ tons
Gauge	ft. in. 4 8½
Length over buffer beams	52 6
Overall width	8 10½
Overall height	12 8
Bogie wheelbase	8 6
Bogie centres	32 0
Wheel diameter	3 7
Minimum curve negotiable	4½ ch.
Brakes	Air on locomotive; vacuum for train
Engine rating	1,100 h.p. at 1,600 r.p.m.
Diesel engine	Napier Deltic T9-29
Maximum tractive effort	47,000 lb.
Continuous rated tractive effort	30,600 lb.
Maximum service speed	75 m.p.h.
Fuel capacity (engine and boiler)	550 gal.
Compressor	Westinghouse 2EC72A (mechanically-driven)
Exhausters (two)	Reavell FRU 5¼ x 10 (motor driven)
Radiator fan	Mechanically driven
Train heating boiler	Stone/Vapor
Boiler rating	1,750 lb. per hr. at 100 lb. per sq. in.
Boiler water	500 gal.

The diesel engine is a Napier Deltic Type T9-29 rated at 1,100 h.p. at 1,600 r.p.m. It is a nine-cylinder two-stroke, pressure-charged unit, with the cylinders arranged in groups of three. Cylinder blocks form the sides of an equilateral triangle with a crankcase at each corner. As the engine is of the opposed piston type, this arrangement enables each crankshaft to serve two adjacent cylinders, two connecting rods being attached to each crank throw.

Phasing gears at the driving end link the three crankshafts and combine their outputs in a common drive gear through which the engine output is transmitted. The turbo-blower is mounted on the free end of the engine, port timing being so arranged that the blower completely scavenges and pressure charges the cylinders.

Relationship to Type "5" Deltic

The engine differs from the two installed in the prototype English Electric 3,300 h.p. Deltic locomotive, mainly in regard to the number of cylinders and the use of turbo charging. Each engine of the Type "5" locomotive has 18 cylinders in three banks of six and the power developed with normal aspiration is 1,650 h.p. at the maximum rated speed of 1,500 r.p.m. This relationship has given rise to the term "Small Deltic" frequently used in reference to the Type "2" locomotive here described.

Resilient Mountings

The main generator frame is bolted to a housing on the diesel engine, and together with an auxiliary generator mounted on the top, forms a compact integral power unit. Resilient supports allow normal flexing of the locomotive underframe without the transmission of stresses to the power unit. Removal of the complete power unit is a comparatively simple operation.

Oil and water are cooled by a double-bank radiator, one radiator panel being mounted at each side of the locomotive. A mechanically-driven fan draws air across the radiators and expels it through the roof. Radiator shutters, controlled from the cab, provide protection against frost. The temperature of the cooling water is controlled automatically by a thermostatic radiator by-pass valve.

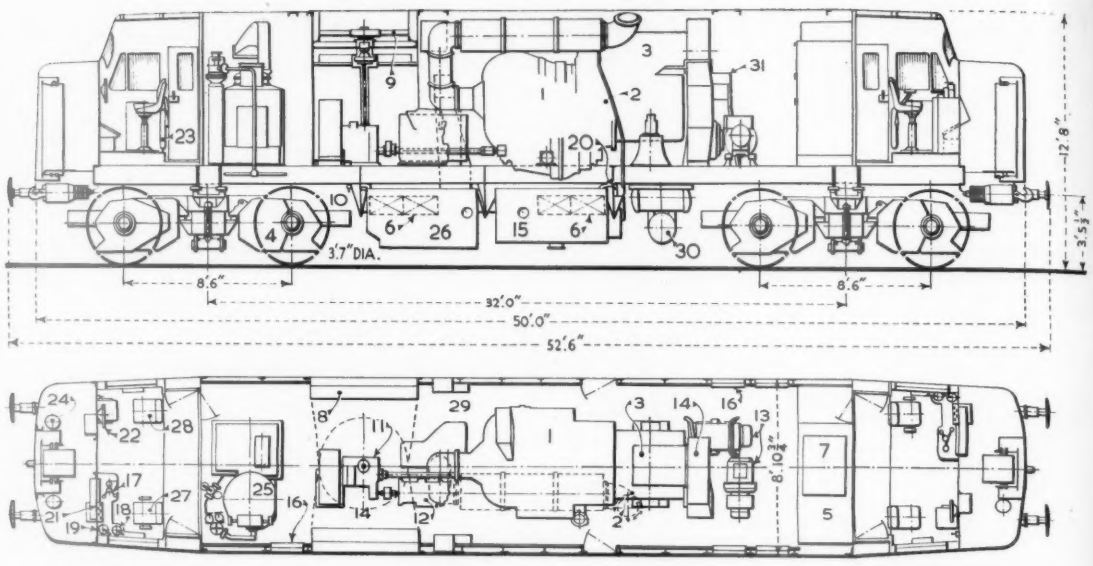
Generator Motored for Starting

The main generator is a d.c. self-ventilated, single-bearing machine. It has a separately-excited winding for normal running, and a series winding used when the generator is connected across the battery for engine starting. The electrical output is varied by control of the engine speed and the main generator field excitation.

The auxiliary generator is driven by an auxiliary shaft from the engine phasing gearbox. It is a d.c., self-ventilated machine, and its output is maintained at 110V. by a carbon-pile regulator. The low tension supply for charging the battery, operating the control gear, and driving the exhauster motors is from the auxiliary generator. Also this source supplies the train-heating boiler control gear, the boiler auxiliaries, cab heating, and locomotive lighting.

Rotating-Vane Exhausters

Locomotive auxiliaries comprise two exhausters, a compressor, and two traction motor blowers. The two motor-



1	Engine	9	Radiator fan	17	Master controller	25	Train heating boiler
2	Main generator	10	Water pressure filling	18	Air brake valve	26	Water tank
3	Auxiliary generator	11	Auxiliary drive gear box	19	Vacuum brake valve	27	Driver's seat
4	Traction motors (4)	12	Air compressor	20	Fuel pressure filling	28	Assistant's seat
5	Control cubicle	13	Vacuum exhausters (2)	21	Instrument panel	29	Lub. oil tank
6	Batteries	14	Traction motor blowers	22	Handbrake	30	Reservoirs
7	Resistances	15	Fuel tank	23	Fire extinguishers	31	Breakfast cooker
8	Radiator panels	16	Air filters	24	CO_2 equipment		

Sectional side elevation and plan of Type "2" English Electric 1,100-h.p. diesel-electric locomotive showing principal dimensions

driven Reavell FRU 5¾ x 10 exhausters provide the vacuum for operating the train brakes. This rotating-vane type of machine normally runs at 715 r.p.m. but may be speeded up to 1,430 r.p.m. under the control of the driver when a more rapid brake release is required.

The Westinghouse 2EC72A compressor is driven through a plate clutch, from an auxiliary gearbox which in turn is driven by a shaft from the engine. The compressed-air supply operates the locomotive brakes, control gear, warning horns, and the sanding equipment. The traction motor blowers are centrifugal fans, one of which is driven from the auxiliary gearbox and the other from an extension shaft on the auxiliary generator armature.

The radiator fan is roof mounted and also is driven from the auxiliary gearbox. The vertical drive is through a shaft with flexible couplings interposed. A centrifugal clutch in the final drive limits the torque imposed on the fan when starting up or shutting down the engine.

Single-Reduction Spur Gearing

The four axle-hung nose-suspended traction motors drive the road wheels through single-reduction spur gearing. They are series wound, direct current machines. The use of field-strength weakening by field divert resistances extends the range of locomotive speeds over which full engine power is available. Each pair of motors is force-ventilated from the adjacent blower in the locomotive superstructure, the air being led from the blower by ducts and flexible bellows connections to the air inlet at the commutator end of the motors.

All the control gear is housed in a single cubicle which faces into one of the cabs and is placed transversely across the locomotive. The traction motors are connected in two parallel groups across the main generator, each group consisting of two in series. Wheel-slip protection circuits are included but in the event of wheel slip occurring the driver is warned by an indicator light. The tractive effort is reduced automatically until wheel slip ceases.

Fault Protection

Additional warning lights are placed at the driving position to indicate that the diesel engine has shut down and the presence of a fault such as high water temperature. In the event of low lubricating-oil pressure or low cooling-water level, the diesel engine is shut down automatically.

There are two master controllers, one at each driving position. The control circuits are energised by electro-pneumatic and electro-magnetic contactors and relays. Step-less variation of the diesel engine speed gives a range from 600 r.p.m. to 1,600 r.p.m. and the loading is adjusted automatically to cause the engine to deliver the maximum available power output corresponding to the selected r.p.m. The advantage of this system is that the diesel engine runs at the lowest possible speed at which the load demand can be met. Fuel consumption is thereby reduced, and wear minimised. An Ardleigh governor controls the engine r.p.m.

Double-End Arrangement

The driving cab at each end has access doors at both sides. A door in each cab rear bulkhead allows entry into the engine compartment. This compartment may be reached also through one door in each body side. The superstructure has nose ends in which are accommodated the vestibule gangways.

The locomotive underframe is made up of four longitudinals, the two main members being joists and the two outer members being channels. These are cross connected by transoms of welded construction to form the bogie pivot centres and there are additional cross stretchers. Drag boxes are welded at both ends of the underframe to carry British Railways standard screw couplings and side buffers. Provision has been made also for the fitting of buck-eye couplers.

The fuel and water tanks are both underslung from the centre of the underframe and are recessed at one side to provide platforms to carry the batteries. The battery boxes are well ventilated, and ready access for topping up or removal of the batteries is through drop-down hinged doors.

The superstructure side framing is prefabricated and attached to the underframe by welding. Removable roof sections over the control cubicle, the power unit, and the boiler, facilitate maintenance of the equipment.

Welded Bogies

The bogie frames are of fabricated construction, the solebars being welded to form a box section. The fabricated transom and headstocks are riveted to the solebars. The load from the superstructure is transmitted by a single bolster riding in each bogie. The bolster is carried on semi-elliptic laminated springs, which in turn are carried on a swing plank. The swing plank is supported

from the bogie frame by inclined swing links.

Springing between the bogie frame and the road wheels is provided by nests of coil springs which are located between the underside of the bogie frame and the top side of the equaliser beams. In turn, the forged steel equaliser beams are underslung from the roller-bearing axleboxes. There are forged steel hornclips on each side of the axlebox guides, and manganese-steel liners on the axlebox guides and on the axleboxes. Similar liners reduce wear on the traction faces of the bolster and bogie transom. The lateral swing of the bolster is limited by rubber blocks.

All wheels have clasp brakes. The air-brake cylinders are mounted on the bogie solebars and operate through a system of levers and rods. The brake equipment is manufactured by The Westinghouse Brake & Signal Co. Ltd. In each cab there are two brake handles, one controlling the straight-air locomotive brake, the other the vacuum brake. There is a vacuum-air proportional valve. There is a deadman's pedal at each driving position and the locomotive has standard British Railways ATC equipment.

Immediately behind the rear bulkhead of no. 1 cab is situated the train-heating boiler and beyond that are the radiators and fan. The two motor driven exhausters are situated between the main generator and the control cubicle.

Common Filtered-Air Supply

Oil-wetted filters are provided in the body sides and all air taken into the locomotive passes through these. The diesel engine and generators, together with the traction motor blowers, draw their air from the filtered supply in the engine compartment.

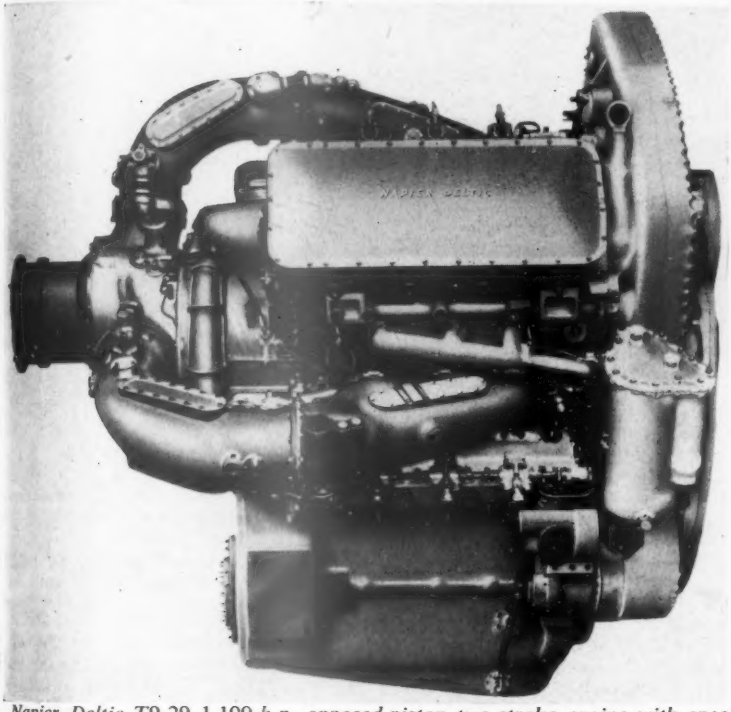
The driver's controls in each cab are built into a desk. The master controller is locked and made inoperative by a master key. Once the controller has been unlocked, one of its two handles, which has four positions, normally would be moved from the "off" position to "engine only." When the engine has been started and the first handle has been moved again to select the direction of travel, the power output is controlled by the second master-controller handle. The driver may change from one cab to another without stopping the diesel engine, as the "engine stop" button control is independent of the interlocks.

Additional instruments in each cab include two air gauges, a vacuum gauge, a speedometer, and an ammeter to indicate the main generator current. At the second man's side there is an indicator light to prove satisfactory functioning of the boiler, and a steam-pressure gauge. Switches are provided for operating the sanding gear, windscreen wipers, and demisters.

The seating is upholstered and adjustable. Four kW. of cab heating is available, and there is an electric cooker in the engine room.

Sub-contractors for the locomotive include:

Air brakes and compressor	Westinghouse Brake & Signal Co. Ltd.
Exhausters	Reavell & Co. Ltd.
Train-heating boiler ...	J. Stone & Co. (Deptford) Ltd.
Battery	D.P. Battery Co. Ltd.
Hydraulic buffers ...	Oleo Pneumatics Limited
Windscreen wipers ...	Trice-Folberth Limited
Windows and demisters	Beckett, Laycock & Watkinson Limited
Instruments	Smiths Industrial Instruments Limited
Engine governor ...	Ardleigh Engineering Limited
Axle roller bearings ...	Skefko Ball Bearing Co. Ltd.



Napier Deltic T9-29 1,100-h.p. opposed-piston two-stroke engine with speed range 600-1,600 r.p.m. for diesel-electric traction, and combined mechanical and exhaust-turbine drives to scavenge blower

Small General-Purpose Computer

SIRIUS is a transistorised desk-size electronic digital computer which, designed for general-purpose work, is believed to be the smallest and most economically-priced computer in Europe. It weighs only 5 cwt., measures approximately 7 ft. x 3 ft. 6 in. x 4 ft. high, including a standard office desk, and can be plugged into ordinary power sockets.

It has been designed to provide a small and relatively inexpensive machine for organisations which do not have the volume of work to keep a large machine economically occupied. Although its chief application is expected to be statistical analysis, it is also intended for use in connection with the training of electronic engineers, technicians, and physicists. Other suitable applications may be found by consulting engineers.

It may also provide a valuable ancillary machine for a large computing installation so that additional experimentation outside the major stream of activity can be computed without interrupting the main machine, or it could compute statistics for the large machine, an important consideration where large installations must now work on secondary tasks before they can be used for their main functions.

The computer is constructed of neuron packages and magneto striction delay lines. It is fully-transistorised. It works in decimals, each decimal digit being represented for four binary digits. Checking is done internally by automatic detection of forbidden combinations. Input and output is on paper tape and a set of 100 buttons, similar to a desk calculator, may be used to operate the machine or put information directly into the main store. Very few buttons need be used for developed programmes. The basic input/output speeds are the same as for the company's larger all-purpose Pegasus.

The first Sirius will be offered for hire at about £15 an hour.

Price is £15,000. Delivery is within three months from date of order. Further information can be obtained from the manufacturer, Ferranti Limited, Hollinwood, Lancs.

Garage Door

THE Bolton Glydover is an overhead garage door built of rust-proof steel and designed to save space and conform to all styles of architecture. When fully open the door leaves the entrance clear on all sides, and there are no projections to damage car or clothes. It slides up under the roof travelling smoothly on nylon pulleys along a curved track and, being counterbalanced by powerful springs, requires little effort to operate.

The door remains perfectly balanced in any position and is entirely safe. The leading or bottom panel is fitted with a rubber cushioning strip which acts as an efficient draught-proof seal when the door is closed.

All parts, including panels, are easily replaced at low cost. Operation can be manual or automatic. Standard size is 8 ft. wide by 7 ft. high, but measurements can be ordered to suit individual requirement.

Further details can be obtained from the Bolton Gate Co., Ltd., Waterloo Street, Bolton, Lancs.

Southern Region Cross-Channel Car Ferry

Drive-on drive-off ferry service between Dover and Boulogne

Main car deck, showing ramps leading to the mezzanine car deck

BRITISH Railways largest ship, the 4,413 ton (gross) car ferry the *Maid of Kent*, entered regular service between Dover and Boulogne on May 28.

The ship can carry 180 cars and 1,000 passengers. It carries nearly as many cars as the two British ships on the service last year combined. With the new French car carrier, *Compiègne*, and the British Railways *Lord Warden*, it will provide more than twice the accommodation available two years ago.

Vehicles are carried on main and mezzanine decks, access to the latter being by means of ramps from the main deck. The mezzanine deck extends from forward to amidships only, a clear deck height of 11 ft. being retained at the aft end of the main deck to permit caravans and touring-type motor coaches to be carried. The single stern door fitted between the main and promenade decks hinges upwards and outwards and is power operated by an electrically-driven winch. There are two turntables on the main deck, the one at the aft end is 22 ft. dia. and power operated; it is suitable for vehicles weighing 24 tons.

Passenger Accommodation

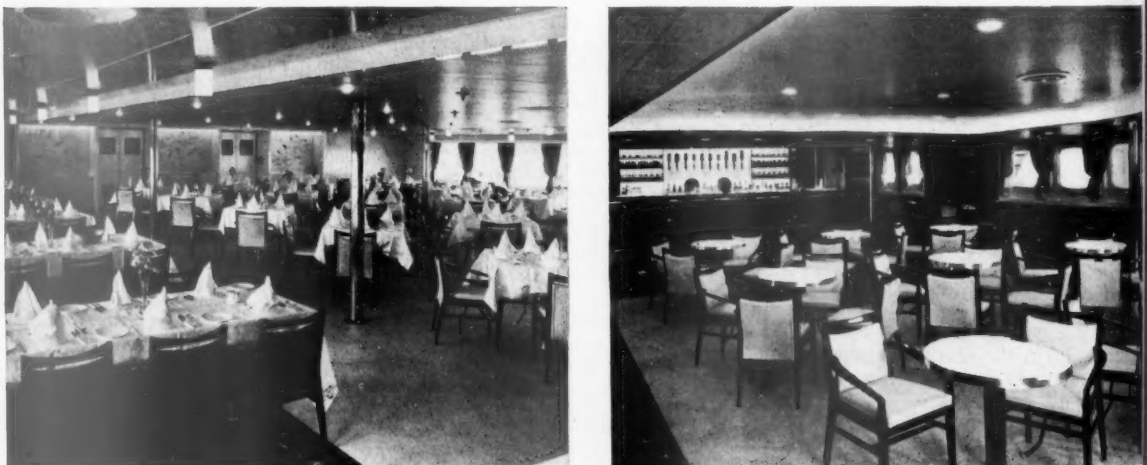
A well appointed smoke room with bar is arranged at the forward end of the boat deck. The smoke room, which will seat 126, is panelled in walnut grained plastic. A fully equipped bar is fitted at the aft end.

A spacious lounge buffet has been arranged forward and amidships on the promenade deck. It is in two sections consisting of port and starboard corridors amidships leading into the lounge proper forward, which extends the full width of the vessel. Seats are arranged along the ship side, fitted with head rests. Chairs and tables are fitted at the forward end where a self-service buffet is provided.

Opening off the aft end of the main entrance is the restaurant. This extends the full width of the vessel. A total of 168 persons can be accommodated at one sitting.

Features of the new vessel as compared with the *Lord Warden* are the two motor-car decks, bow lateral thrust unit, twin rudders, power operated turntable, fibreglass lifeboats, single hinging up power operated stern door and a flying bridge.

The *Maid of Kent* was built by Wm. Denny & Bros. Ltd., of Dumbarton, and launched on November 27, 1958.



Restaurant (left) and smoke room and bar (right), showing simple decor

RAILWAY NEWS SECTION

PERSONAL

Mr. G. W. Fruin, Comptroller of Stores, Western Australian Government Railways, is retiring. He will be succeeded by Mr. C. C. Gates, Chairman of the Railway Planning Board.

Mr. G. Aziz Ahmad, Deputy General Manager (Works), Eastern Bengal Railway, who, as recorded in our May 15 issue, has been appointed Chief Engineer, holds a Bachelor of Science degree in Civil and Electrical Engineering. He received practical training in England and on the former Great Indian Peninsular Railway. Mr. Ahmad joined the Bengal & North Western Railway, in 1933, as an Assistant Engineer. He served in various capacities from 1933 to 1945 and was closely concerned with the Bihar earthquake, of 1936, when extensive damage was done to the railway property. In 1945, he was appointed Deputy Director, Civil Engineering, Indian Railway Board. At the end of 1946, he was lent to the Department of Commerce & Industries, Government of India, and served abroad for a number of years. In October, 1957, he returned to the E.B.R. and assumed the appointment of Deputy General Manager (Works). His present appointment as Chief Engineer, dates from June, 1958.

Mr. Rudolf Hahn, Chairman & Managing Director, B.K.L. Alloys Limited, has been elected President of the Aluminium Association for 1959-60. He succeeds Mr. S. E. Clotworthy, Managing Director, Northern Aluminium Co. Ltd., who becomes Vice-President of the Association.

B.T.C. Appointments

The following appointments are announced by the British Transport Commission :—

Traffic Adviser's Department

Mr. R. A. Taylor, Lecturer in Economics, University College of Wales, Aberystwyth, to be Assistant (Traffic Information Branch).

Manpower Adviser's Department

Mr. J. Coulthard, Assistant to District Goods Manager, Bolton, London Midland Region, British Railways, to be Assistant Director of Studies.

Mr. H. E. Cardy, Works & Land Assistant, Waterways Division, to be Assistant Director of Studies.

Mr. J. F. Rogers, Assistant to District Traffic Superintendent, Woking, Southern Region, British Railways, to be Assistant Director of Studies.

The above three appointments are in the Training & Education Division, British Transport Staff College, Woking.

Establishment Division

Mr. P. C. Younger, Secretary, L.N.E.R. Superannuation Fund and Pensions Officer, Eastern Region, British Railways, to be Pensions Officer.

Services of the Commission

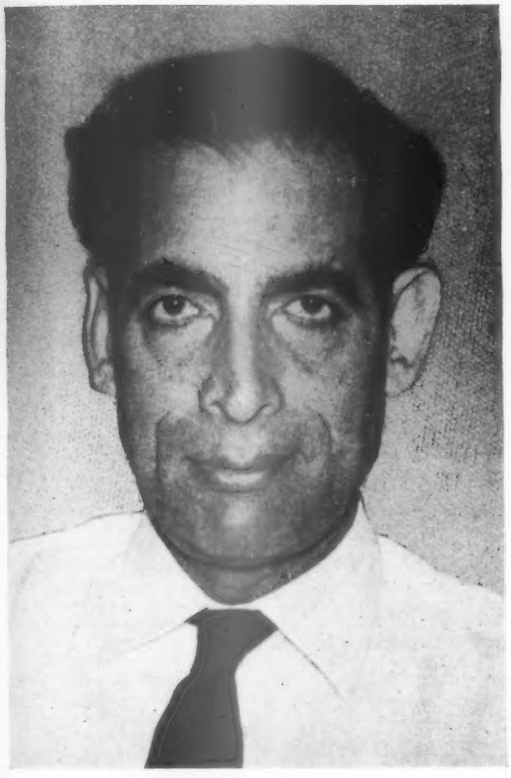
Mr. J. Dearden, Assistant Superintendent, Metallurgy Division, Research Department, Derby, to be Superintendent, Metallurgy Division, Derby.

Architect's Department

Mr. I. T. M. Davis, to be Sectional Architect.

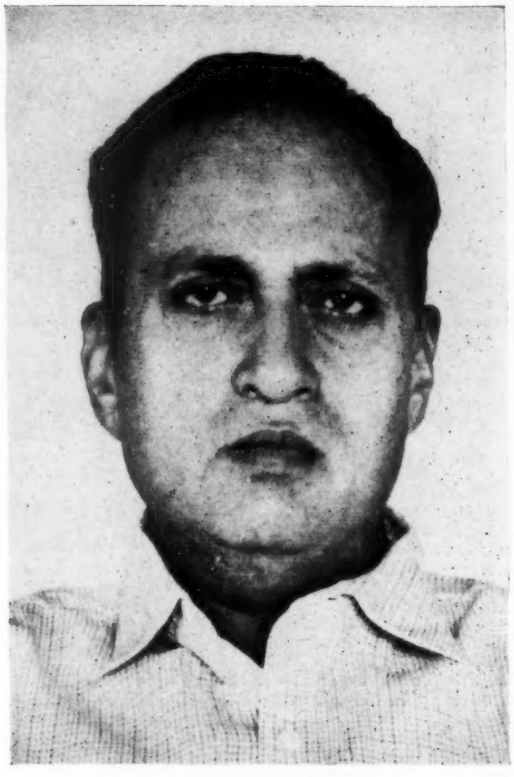
Mr. W. R. Davies, clerk to the British Transport Officers' Guild, will relinquish his office on June 30. He will be succeeded, on July 1, by Mr. L. W. Orchard

Mr. R. A. Sadique, Director of Traffic, Pakistan Railways, has been appointed Chief Traffic Manager, Eastern Bengal Railway. Mr. Sadique was born in 1912, and obtained an M.Sc. degree, at Lucknow University. He joined the Indian State Railways in 1935, as a probationer, and was posted to the East Indian Railway. He subsequently served as Assistant Superintendent (Commercial); Superintendent (Commercial); Research Officer, and Traffic Survey Officer. In August, 1947, Mr. Sadique was transferred to the North Western Railway, as a claims officer. In 1951, he was promoted to be Deputy General Manager (Personnel) and three years later was made Deputy Chief Traffic Manager, Eastern Bengal Railway. Mr. Sadique was transferred to the Railway Division, in 1958, as Joint Director, Traffic, subsequently becoming Director of Traffic, the appointment he now relinquishes.



Mr. G. Aziz Ahmad

Appointed Chief Engineer of the Eastern Bengal Railway



Mr. R. A. Sadique

Appointed Chief Traffic Manager, Eastern Bengal Railway

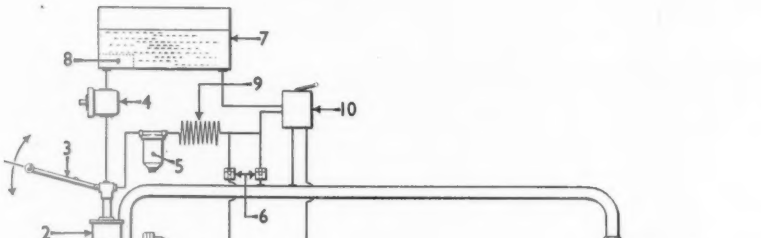
B.R.S. Appointments

The following appointments are announced by British Road Services :

Mr. L. Holderness, Senior Mechanical Handling Assistant, Traffic Department, Headquarters, as Planning Officer (Parcels), Headquarters.

Mr. I. S. Hughes, Deputy Sales Assistant, Chief Commercial Manager's Office, Scottish Region, British Railways, as Commercial Officer, Western Division.

NEW EQUIPMENT AND PROCESSES



1. Pump
2. Servo jack and control valve
3. Speed control lever
4. Booster pump
5. Filter
6. Non-return valve
7. Reservoir
8. Suction strainer
9. Cooler
10. Relief and shuttle valve block
11. Motor

Hydrostatic Transmission

APPLICATIONS of the Dowty "Transmatic" drive now available are the Road-Marshall Highwayman, an 8/13-ton diesel road-roller produced by Marshall Sons & Co. Ltd., of Gainsborough, and the 48DH locomotive, a narrow-gauge diesel locomotive produced by Ruston & Hornsby Ltd., of Lincoln.

Apart from the transmission, the 48DH is practically identical to the Ruston 48DL engine. The difference lies in the 4YDA air-cooled diesel engine which provides the ultimate power unit.

The Dowty transmatic drive consists of a variable displacement hydraulic pump driven by the prime mover and a fixed displacement hydraulic motor normally coupled to a final drive reduction gearing.

The pump is of axial-piston tilting-head type, the angle of the pumping elements being altered to adjust the stroke of the pistons. The motor uses identical rotating parts, but is set at the maximum angle of 35 deg.

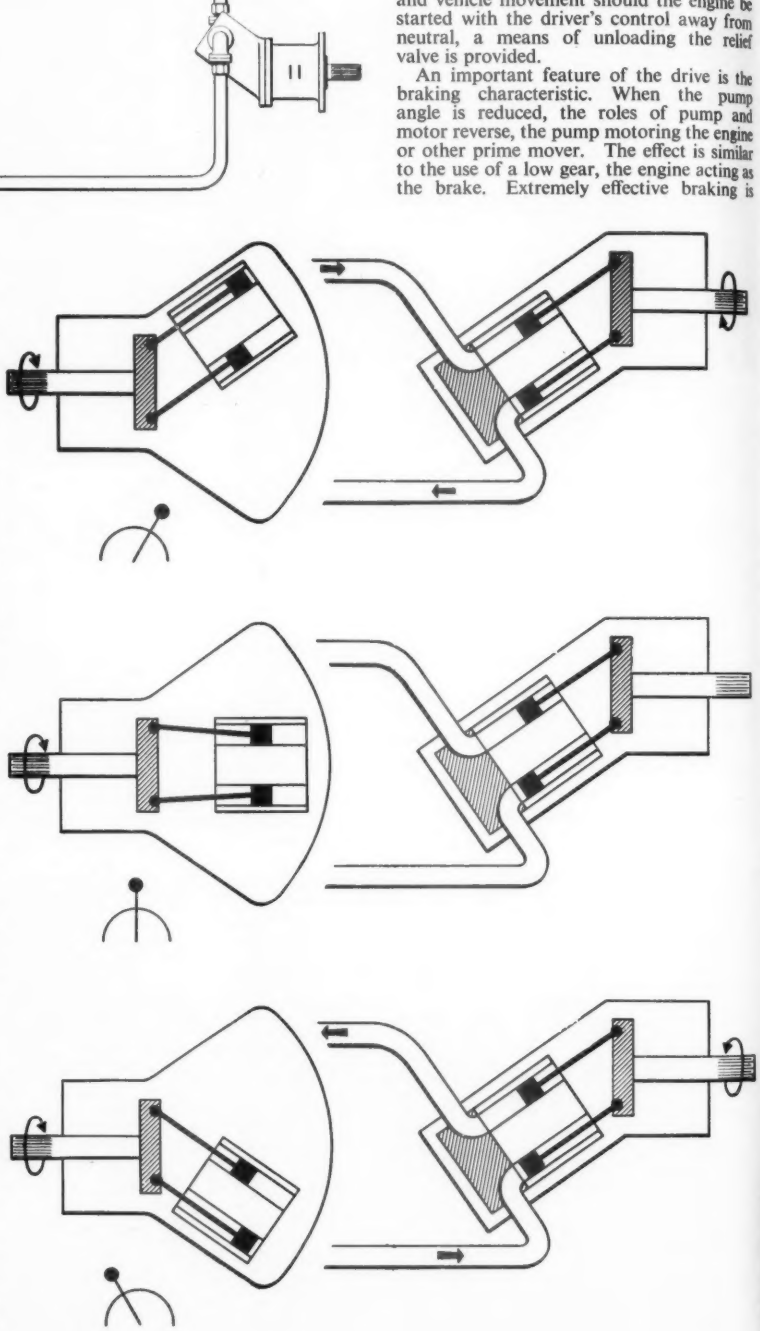
The principle of operation is shown in the diagrams adjacent to this column. When set as in the top diagram, maximum oil flow is obtained in one direction and the motor is revolving at the same speed as the pump. At the position shown centre, the pump is set at zero angle, which is the "no stroke" condition for the pistons. No flow can take place and the motor is stationary. As a hydraulic lock occurs, the motor shaft cannot be rotated until a torque sufficient to generate a pressure equal to the relief valve setting has been applied. When positioned as in the lower of the three diagrams, the pump is set to the full opposite angle and the motor is consequently revolving at full speed in the reverse direction.

The pump, motor and the two main connecting pipes form the primary circuit. A low-pressure circuit is also used, to boost the suction side of the primary circuit, and to filter and de-aerate the whole system. This secondary system consists of a Dowty gear pump, micronic filter, the circuit control valves and a small reservoir. A cooler may also be incorporated in this low-pressure circuit. The complete circuit is shown in the diagram above.

The angle of the pump is adjusted by a servo-jack and only a very light hand load is required to adjust the pump output. A mechanical linkage is normally employed between the servo and the actual driver's control.

A high-pressure relief valve is incorporated to protect the system against sudden overloads. To prevent a pressure build-up and vehicle movement should the engine be started with the driver's control away from neutral, a means of unloading the relief valve is provided.

An important feature of the drive is the braking characteristic. When the pump angle is reduced, the roles of pump and motor reverse, the pump motoring the engine or other prime mover. The effect is similar to the use of a low gear, the engine acting as the brake. Extremely effective braking is



obtained, and when the pump angle is at zero the drive is locked hydraulically. The retention of some form of auxiliary mechanical brake system is recommended, and is normally a legal requirement.

The rated performance is based on a torque multiplication of 4: 1 and an input to the pump of 60 b.h.p. at 2,000 r.p.m. Within this rating the overall efficiency does not fall below 80 per cent, the optimum being approximately 90 per cent at half motor speed.

At 60 b.h.p. input, the motor offers full torque from zero to 400 r.p.m. Between 400 and 2,000 r.p.m., torque varies inversely with speed in order to maintain a constant horsepower.

Higher torque and speed ratios can be considered by suitable matching with the characteristics of the application; alternatively, lower torque multiplications at higher input powers are possible.

A range of transmissions capable of handling a variety of powers are under active development.

The following advantages are claimed for the drive: high degree of manoeuvrability, ease of operation and maintenance, elimination of a mechanical drive line (this allows greater freedom of design and better use of space), major improvements to the control of power applied at the wheel, and resultant improvement of overall performance and work capacity.

Forward and reverse speeds can be selected by a single lever while maintaining the engine at optimum setting. Drive ratio can be constantly varied. The controlled ratio permits accurate holding and manoeuvring on a steep incline and the braking characteristics eliminate the need for any mechanical system other than a parking brake.

Maximum output torque is available from zero up to the highest speed possible in relation to the engine power. Below this speed full engine power is not needed to maintain the maximum torque.

Control characteristics permit the highest performance without deliberate abuse of the machine. Overload valves provide an additional safeguard.

Conventional clutch, gearshaft systems, and reversing mechanisms are eliminated. Ease of operation reduces driver fatigue.

Various control refinements, including the prevention of engine-stall under overload conditions, can be applied.

A Ruston 240 motor is used in conjunction with the pump. This is mounted on a spur-and-bevel reduction gearbox with the final drive taken by roller chain to both axles of the locomotive. The fixed displacement motor uses rotating components and valves identical to those in the pump. These parts are contained in a single casting and the swash angle is set to suit application conditions.

The power-control lever actuates servo-mechanisms by forward or reverse movement giving travel in that direction by varying the swashplate angle to the degree of power required. A small release-control valve lever is provided for starting so that the whole system can be off-loaded as required. This smooth, stepless transmission is capable of maintaining high efficiency performance under all hauling conditions, and also provides complete power braking through the transmission. Control is foolproof preventing damage or abuse while maintaining sensitive control, allowing the operator to carry out minute inching and heavy haulage with the same ease.

The engine is a 4-cylinder 4YDA air-cooled diesel developing 50 b.h.p. at 1,800 r.p.m. for which the following advantages for locomotive applications are claimed:—

- Problems associated with water-cooled systems have been eliminated.
- The necessity for protection against engine freezing has been eliminated.
- Servicing has been simplified and accessibility improved, availability thus has been increased.
- Torque characteristic is ideally suited to locomotive work. This provides improved performance, particularly over gradients.
- A wide speed range, i.e., 600 to 1,800 r.p.m., gives greater flexibility. This permits the use of improved speed ratios.
- The engine is suitable for continuous operation at ambient temperatures up to 125 deg. F. (52 deg. C.) and offers easy starting under low temperature conditions.
- The engine warms up quickly and rapidly reaches its correct working temperature, thereby reducing the effects of initial wear.

The 4YDA is a 4-cycle diesel engine with open, direct-injection, combustion chamber. Crankcase and cylinder barrels are of cast iron and are separate castings. Easily-removable inspection covers give access to connecting rods and large-end bearings. Cylinder heads are of aluminium alloy with high-grade cast iron valve-seat inserts. Cylinder barrels and heads have deep, close-pitch fins to ensure efficient cooling. Pressure lubrication is provided for all parts except piston and gudgeon pin, which are splash-lubricated. An oil cooler and oil-bath air filter are fitted. Engine cooling is achieved by axial-flow fan driven by vee belts from the end of the crankshaft, the air being delivered through easily-removable ducting to cylinder barrels and heads.

Of welded construction throughout, the locomotive frame forms a single unit. It is virtually indestructible and fully capable of withstanding shunting shocks and stresses without distortion. The final drive from the reduction gearbox is taken equally to both axles by roller chains. Axleboxes are located by radius rods which provide chain adjustment and ensure that constant chain tension is maintained when springing. This type of drive obviates the possibility of "snatch" and shows considerable advantages over other methods of drive, particularly when sharp curves are to be negotiated and poor track conditions are encountered. Chain sprockets on axles are of the split type which are replaced without disturbing rail wheels.

Dimensions are as follow:—

Width (2 ft. rail gauge) ...	4 ft. 2 in.
Height over bonnet	5 ft. 2½ in.
Height over cab...	6 ft. 7½ in.
Length overall	10 ft. 1½ in.
Wheel base	3 ft. 5 in.
Width of bonnet and cab structure	3 ft. 6½ in.

The following examples show the locomotive's operating costs in two different conditions.

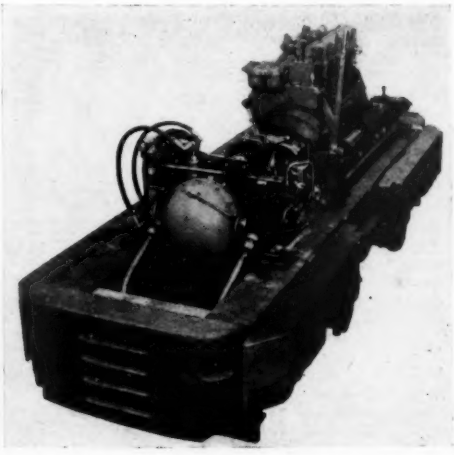
	Case A	Case B
Length of haul	1,000 yd.	2,000 yd.
Conditions	Gradient 1/100 500 yd. long.	Gradient 1/50 to 1/100 1,000 yd. long.
Load hauled per trip	Gross 78 tons, net payload 52 tons, tare 26 tons.	Gross 48 tons, net payload 32 tons, tare 16 tons.
Time	9 min. out. 4 min. in 6 min. for shunts.	14 min. out 9 min. in 6 min. for shunts.
Tonnage in 8 hr. shift.	1,248	512

Cost.—One driver's wages plus 4 gal. diesel oil plus 1.25 pints lubricating oil, plus 0.015 per cent of capital cost per shift for maintenance on single-shift working.

Further details can be obtained from either Dowty Hydraulic Units Limited, Ashchurch, Tewkesbury, Glos., or Ruston & Hornsby Limited, Lincoln.

Dowty "Spats"

We regret that our description of the improved Dowty "Spat"—please see our item "Roof Washers" on page 573 of our May 15 issue—contained an inaccurate reference to the weight of that product. The statement should have read: "Its light weight—one gross weighs only ¾ lb . . . "



Inaugural Trip of "Maid of Kent"

Cross-Channel car ferry on Dover-Boulogne service

Monsieur F. Sarrez-Bournet and Sir Philip Warter toasting the "Maid of Kent." Also shown are Mr. K. W. C. Grand (behind Sir Philip Warter), Mr. E. L. Denny, and Mr. C. P. Hopkins

British Railways, Southern Region, new cross-Channel car ferry, the *Maid of Kent*, made its inaugural voyage from Dover to Boulogne on May 27. On May 28, it entered regular commercial service on the drive-on drive-off ferry service between Dover and Boulogne.

The ship can carry 180 motor-cars and 1,000 passengers. In addition to the restaurant which accommodates 168 passengers there is a self-service cafeteria in the lounge buffet. This is the first time that cafeteria service has been provided on a Southern Region cross-Channel steamer.

Crossing on the ship on the inaugural trip were Sir Philip Warter, Chairman of the Southern Area Board, Mr. C. P. Hopkins, General Manager of the Southern Region, and Mr. R. E. Sinfield, Shipping & Continental Manager. Mr. K. W. C. Grand, Chairman, Management Committee, British Transport Commission, represented the B.T.C. Other guests included Sir Reginald Biddle and Mr. J. Macnaughton Sidey, Members, Southern Area Board; Mr. F. D. M. Harding, Managing Director, Pullman Car Company; and Mr. E. L. Denny, Chairman, William Denny & Bros. Ltd.

At lunch on board the ship, Sir Philip Warter paid tribute to the builders, William Denny & Bros. Ltd., on behalf of the British Transport Commission, the Southern Area Board, and the Southern Region. It was, he said, a worthy successor to a number of fine cross-Channel ships built for the Southern Region by Dennys, which had given yeoman service to the Region in peace and the country in war.

Cross-Channel motor-car traffic was, he remarked, a co-operative effort and the Region needed all the support it could get from the motoring organisations, the A.A. and R.A.C., and from the tourist agents and tour organisations. It could fairly be said that the British and French Railways and the Port Authorities had, at enormous cost, provided the facilities for this traffic and it was up to the undertakings concerned with Continental travel and the public to support them. It must not be overlooked that whereas the passenger ship services can sometimes be justified because of the contributory railway receipts, the car ferries must obviously pay their own way or there was no justification at all for running them.

At Boulogne a reception was held in the Gare Maritime by the Boulogne Chamber of Commerce. Its president, Monsieur F. Sarrez-Bournet, welcomed the guests, and the reply was made by Mr. C. P. Hopkins.

Rapid Transit in Caracas

A study of a rapid transit system for Caracas, Venezuela, either an underground railway or a monorail, is being prepared by Colonel Sidney H. Bingham, consulting engineer, and formerly Chairman of the Board of Transportation and Manager of the Transit Authority, New York City. Dr. Francisco Batalla, Governor of the Federal District of Caracas, has stated that a high-capacity passenger transport system has become essential for the city and surroundings. The population of the city, now over 1,100,000, has almost doubled since 1950. The problem is aggravated by the narrowness of the streets in the centre, and by the situation of the city in a valley 11 miles long, three miles wide.

Colonel Bingham is leading a delegation which is inspecting urban transport in large cities in other countries. The other members are Dr. J. Sanabria, Civil Engineer; Dr. A. E. Olivares, Civil Engineer; Dr. B. Blaschitz, Mechanical Engineer, and Dr. R. Lampo. The cities being visited include Oslo, Stockholm, Paris, and London.

The average cost of a monorail system, Colonel Bingham has stated, is about £700,000 a mile. That of an underground railway is about £4.6 or £5.7 million a mile. The system in Caracas, even if it is to be a monorail system, will be partly underground. Either an underground line or a monorail would give a journey time over the entire length of the city in 20 min. At present it takes almost 2 hr. to traverse the city by road. Stations would probably be three-quarters of a mile apart, and the line would be about 10 miles long. The study will include provisions for expansion.

METROPOLITAN RAILWAY SURPLUS LANDS CO. LTD.—The group profits of Metropolitan Railway Surplus Lands Co. Ltd. for 1958 rose to £177,264 from £122,529, after tax of £165,066 (£182,998). The dividend is raised by 3 per cent to 10½ per cent with a final payment of 7 per cent.

CLOSURES IN LONDON MIDLAND REGION.—Waverton passenger station, between Crewe and Chester, British Railways, London Midland Region, is to be closed from June 15 because it is unremunerative. Passengers can book to Chester or Tattenhall Road according to direction of travel, and proceed thence by Crosville Motor Services Limited buses. Parcels and passenger train merchandise will be dealt with at Chester and the present arrangements for goods traffic will continue. From June 15 also, in the same Region, Four Ashes passenger station, between Wolverhampton and Stafford, is to be closed. Passengers can book to Penkridge station and travel onwards by buses of the Birmingham & Midland Motor Omnibus Co. Ltd. Parcels and passenger train merchandise will be dealt with at Wolverhampton High Level. The present arrangements for goods traffic will continue.

ENGLISH ELECTRIC CO. LTD. SHARE ISSUE.—In accordance with the resolution passed at the Extraordinary General Meeting held by the English Electric Co. Ltd. on March 19 last, 10,046,335 new ordinary shares of £1 each have been allotted credited as fully paid up to the ordinary stockholders of the company on the register April 30, 1959, in the proportion of one new share for every £2 nominal of ordinary stock then held. Stock Exchange quotation was granted on May 27. In a circular letter to ordinary stockholders dated February 24, 1959, the Chairman, Sir George Nelson, stated that the total amount which the directors would recommend for distribution on the capital as increased by this issue would not differ from the amount which they would have recommended for distribution if the capital of the company had remained unchanged. In relation to the current ordinary dividend of 14 per cent for a full year, the equivalent rate on the capital, as increased by the 10,046,335 shares credited as fully paid up, is 9⅓ per cent.

D.S.I.R. COMMITTEE ON FATIGUE OF ENGINEERING STRUCTURES.—A committee to review current research needs on the fatigue of engineering structures and to survey existing research facilities has been set up by the Council for Scientific & Industrial Research after an approach from the Institution of Civil Engineers. It will not include reinforced concrete structures, aircraft structures, or metal physics in the scope of its review, though information gained in these fields will be used. The terms of reference are: "To review current research needs on fatigue of engineering structures (metal), to survey existing research facilities and to make recommendations to the Department of Scientific & Industrial Research." The committee is interested in examining records of failures or accidents which might have been due to structural fatigue, even although fatigue was not recognised as the initial cause. Such information may be helpful in revealing areas in which further research work is needed. The names of the committee are given in our Personal columns.

Staff and Labour Matters

Railway Shopmen

At the National Union of Railwaymen National Shopmen's Conference at Southport last week, a resolution was passed calling for strike action unless the British Transport Commission ceased contracting Railway work out to private firms.

The resolution was in the following terms: "This union, having considered the serious position that now exists due to the British Transport Commission's policy in relation to the closing of British Railways workshop centres and the placing of railway work to private enterprise to the detriment of workshop staffs, causing grave hardship and redundancy, demand that our national executive committee shall inform the B.T.C. that unless they call an immediate halt to their policy of placing railway contracts to outside industry this union will call a stoppage of work of all its members."

It is understood that a similar resolution will be put forward at the annual conference of the N.U.R. which takes place in July.

Writing in the current issue of the *Railway Review*, a representative of the railway shopmen states that railway shopmen had always met their obligations, but they have proved themselves in comparison with outside firms; and there is no need to use such sources when the railways have their own capacity to meet requirements. The railway shopmen, he added, proved themselves during the war period when they were required to undertake all types of engineering production.

"No doubt all these factors were taken into account by the B.T.C." the article continues "when they compiled their estimates, but there would have been a better appreciation of the position by arriving at the conclusion that British Railways were going to do all their own work, and that the industry was going to concentrate towards self-sufficiency even if it meant spending some of the money allotted to the modernisation scheme for purchasing plant and equipment to meet the new forms of traction, etc."

WITHDRAWAL OF G.N. LINE PASSENGER SERVICES.—From June 15 the passenger train service will be withdrawn from Tallington, Essendine, Little Bytham and Corby Glen stations on the Great Northern main line of British Railways, Eastern Region, between Peterborough North and Grantham. From the same date the Stamford to Essendine branch will be closed to all traffic except for a short section which will be retained to serve sidings at Stamford. Passengers will be catered for at Grantham and Peterborough stations by trains serving the route from Stamford to Peterborough via Helpston and by bus services operating in the area. The C. & D. services for parcels and freight will continue to be available. Facilities for handing in and collecting parcels will be retained at all the stations involved except Ryhall, on the Stamford-Essendine branch.

L.T.E. Central Line Services to N.E. London.—Representatives of the Boroughs of Wanstead and Woodford, Chingford, Ilford and Leyton, the urban districts of Chigwell and Epping, and the rural district of Epping and Ongar met representatives of the London Transport Executive at 55, Broadway, S.W.1, on May 29, to discuss the problems of travel on the Central Line and the local authorities' proposal for a new alternative railway route. The councils' representatives will be reporting to their councils. It was agreed to give consideration to a proposal made in the course of the discussion that the local authorities and L.T.E. should in future keep closely in touch.

Contracts and Tenders

Diesel-electric locomotive gearing for the B.T.C.

Orders for diesel-electric locomotive gearing to the value of some £250,000 have been placed with the General Gear Division of David Brown Industries Limited by the British Transport Commission. Part of the order covers the supply of about 70 sets of diesel engine synchronising gears of the spur type, case-hardened and profile ground. The remainder of the order covers a large quantity of case-hardened and profile-ground spur pinions and wheels of resilient design with hardened teeth. The locomotives are to be built at British Railways workshops, Derby, for ultimate use in the London Midland Region.

British Railways, London Midland Region, has placed the following contracts:

W. H. Jones & Son, Ltd.: reconstruction of parcels office at Coventry Station

D. Lynch: site works for temporary station during reconstruction of Coventry Station

Edward Wood & Sons Ltd.: new medical centre and alterations to old hospital at Crewe

Tilghman's Limited: installation of fume removal and collection plant in steel foundry at Crewe Locomotive Works

Leonard Fairclough Limited: general work in connection with concentration of sundries traffic at Warrington Bank Quay

Trinidad Lake Asphalt Co. (North Western) Ltd.: resurfacing of roadways at Liverpool Lime Street Station, Liverpool North Mersey Goods Yard, Liverpool Sandon Dock Goods Station, and St. Helens Junction passenger station

Matterson, Huxley & Watson Limited: structural steelwork at Stoke new freight terminal shed.

British Railways Eastern Region, has placed the following contracts:

Metropolitan - Vickers - GRS, Limited: supply, delivery, and installation of signalling in connection with hump cabin and control tower at Ripple Lane Marshalling Yard

Stothert & Pitt Limited: Supply, delivery and erection of four six-ton electrically operated rail travelling level luffing jib cranes and associated equipment at Canning Town and Blackwall

Grant Lyon & Co. Ltd.: provision of counterforts and drainage and the trimming back of cutting slopes between Crews Hill and Cuffley

Dorman Long (Bridge Engineering) Limited: reconstruction of superstructure of underline bridge No. 1888 between Clapton and St. James Street

Saville (Tractors) Limited: supply and delivery of International BTD-20 crawler tractor fitted with B.20G-2 front pump hydraulic bullgrader equipment and heavy duty tractor vision cab

Brightside Heating & Engineering Co. Ltd.: supply, delivery and installation of boiler plant, heating system, oil storage equipment, and all piping for diesel maintenance depot, Stratford.

British Railways, North Eastern Region, has placed a contract for the erection of a new goods shed, consisting of a steel framed, part sheeted, building at Hull English Street, with Octavius Atkinson & Sons Ltd., Harrogate. Brightside Heating & Engineering Co. Ltd., of Newcastle, has been given a contract for the supply, delivery, and erection of a low pressure hot water installation in mess rooms at Newcastle Forth Banks Goods Depot.

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From Pakistan :

5 rail saw units

5 handle and wheel attachments for rail saw

5 rail drilling units

5 13/16 in. drill No. 3 morse taper

3 sud tanks

3 flexible driving shafts, 10 ft. long 15 mm. dia., inner core, with 30 mm. dia., metallic outer easing complete with G.R.I. handle

3 petrol engines, air-cooled type mounted on a rubber tyred wheel trolley.

The issuing authority is the Department of Supply & Development, Government of Karachi. The tender No. is ENG-4/55614/NWR/57. Bids should be sent to the Director General of Supply & Development, Frere Road, Karachi. The closing date is June 9, 1959. Local representation is essential. The Board of Trade reference is ESB/12861/59.

From Korea :

A large quantity of iron and steel materials, paint, building supplies, diesel generating sets, steel boilers, and copper wire.

The issuing authority and address to which bids should be sent is the Office of Supply, Government of Republic of Korea, Seoul, Korea. This purchase will be financed by the International Co-operation Administration (I.C.A.), the agency through which the United States Government gives economic and technical assistance to other countries. The tender No. is 479-S. The closing date is June 13, 1959. The Board of Trade reference is ESB/12791/59/ICA.

Further details regarding the above tenders, together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1).

Notes and News

New Ship for Harwich-Hook Service.—A 6,000-ton ship of the Zeeland Steamship Company, mv. *Koningin Wilhelmina*, expected to be in service on the Hook of Holland to Harwich route by the end of the year, was launched last week by Queen Juliana. It is designed to carry 1,600 passengers, and will replace the *Mecklenburg*, also owned by the Zeeland Steamship Company. The Harwich-Hook night service is worked by British Railways, Eastern Region, and the day service by Zeeland Steamship Company vessels.

Accident to Express in Java.—The locomotive of an express of the Indonesian State Railways from Bandjar to Bandung, in western Java, became detached from the train, apparently because of a broken coupling. The coaches were derailed and overturned. Eighty-five are reported to have been killed and 40 injured. The Minister of Communications, Mr. Sukardan, inspected the scene of the accident, and arranged for an inquiry.

Urban Railway System Considered for Caracas.—Colonel S. H. Bingham, President of the New York Transit Authority, recently studied the urban transport problem in Caracas, Venezuela, at the request of the city authorities. The result of his examination is reported to be recommendation of either an underground railway or a monorail.

Additional Car Park at Totteridge Station, L.T.E.—An additional park for 28 cars has been opened by London Transport Executive at Totteridge Station, Northern Line, on land adjacent to the goods yard. With the previous park in the approach road to the yard, there is now room at the station for 45 motorcars.

Withdrawal of Services from St. Ives-Kettering Line.—British Railways, Eastern and London Midland Regions, are to withdraw the passenger train services between St. Ives (Hunts) and Kettering and the goods train service from Buckden and Grafham stations from June 15. Facilities for passengers will be available on bus services in the area. C. & D. services for parcels and freight sundries traffic will continue and full-load facilities will remain undisturbed except at Buckden and Grafham. Trains between Cambridge and St. Ives on weekdays which at present serve Kettering will be withdrawn on the same date. Arrangements will be made to augment the service between Cambridge and St. Ives.

St. Pancras-Bedford Diesel Services.—By January 4, 1960, it is expected that multiple-unit diesel trains will have replaced completely the steam trains on British Railways, London Midland Region suburban services between London St. Pancras, and Bedford. In off-peak periods there will be an hourly four-car service, with 352 second-class seats, between Bedford and St. Pancras, calling at all stations between Bedford and Elstree. An hourly service also will be given between Luton and St. Pancras calling at all stations. Thus the combined service for stations between Luton and Elstree, and St. Pancras, will be half-hourly. With augmentation during peak periods there will be 18 more trains than at present for Luton each weekday. During peak periods trains of eight-car length will be run. Journey time between St. Pancras and Bedford will be cut by about half an hour and, between St. Pancras and Luton, by about 20-25 min. The peak-hour service to Moorgate also will be speeded up. Preparatory engineering work includes additional platforms at Luton, Leagrave, Harlington, and Flitwick. The goods lines between Bedford and Harpenden are being brought up to the standard necessary for passenger-train operation and additional signalling is being installed. Editorial reference to the new service is made elsewhere in this issue.

New Division for Joy-Sullivan Limited.—An air power division has been formed at 7, Harley Street, London, W.1, by Joy-Sullivan Limited, a wholly-owned subsidiary of the Joy Manufacturing Company of Pittsburg, U.S.A. In addition to a wide range of the company's existing products, the new division will make available to users of British-manufactured compressed air equipment of designs new to this and several countries abroad. The range includes portable, semi-portable, and stationary air compressors, rock drills, paving breakers, air hoists and slushers, wagon drills, drill jumbos, and shovel loaders.

Birmingham Office for A.I. Electric Welding Machines Limited.—New offices in Birmingham to handle business throughout England and Wales and to improve the services available to customers have been opened by A.I. Electric Welding Machines Limited at Grove House, Sutton New Road, Birmingham, 23. Telephone, Erdington 1176. Also the Company's London office has been changed to Temple Chambers, Temple Avenue, London, E.C.4. Telephone, Fle. 6660.

Cambridge Instrument Co. Ltd. Enlarged Headquarters.—The headquarters of the Cambridge Instrument Co. Ltd. are being extended to permit enlarged sales facilities and better attention to customers and correspondents. The official address will remain 13, Grosvenor Place, London, S.W.1. The publicity and accounts departments have moved back to Headquarters, and the premises at 60, Buckingham Palace Road have been vacated.

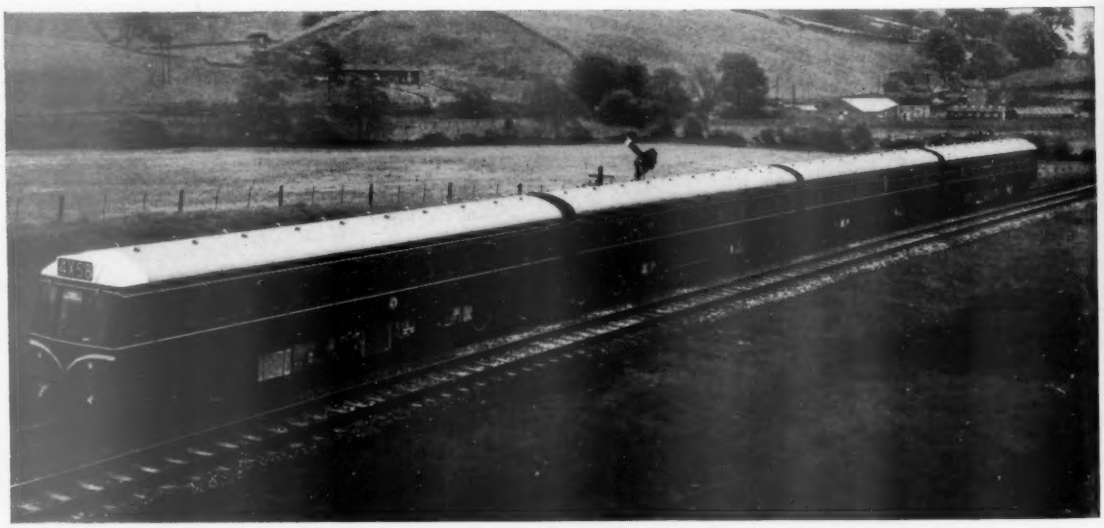
D. Napier & Son Ltd., at Poznan Fair.—Exhibits covering all the principal products of D. Napier & Son Ltd., will be shown on the stand of Ian Stach Limited at the Poznan Fair, Poland, to be held on June 7-21. Turbo-blower exhibits will include rotor-shafts and a sectioned and rotating MS.100 blower. Diesel engines will be represented by a one-quarter scale Deltic 18-cylinder engine, a half-scale cross section working model, and a model of the English Electric Deltic diesel-electric locomotive. Also there will be shown specimens of high-precision castings made by the Napier-cast investment process.

Withdrawal of Passenger Services between Rolleston Junction and Southwell.—The passenger train service between Rolleston Junction and Southwell, Notts., will be withdrawn from June 15. Facilities will be retained for special excursion traffic. Passengers will be catered for by the existing and additional bus services operating in the area. A C. & D. service for parcels traffic will continue to be provided and facilities for handing in and collecting parcels will be retained at Southwell.

Paris-Lille Electric Service.—With the introduction of the French National Railways summer timetables on May 31, the 156 miles between Paris and Lille are now covered in 2 hr. 10 min., at an average speed of 72 m.p.h. The expresses are composed of stainless steel coaches. From a call-box installed in the *voiture-bar* passengers can be connected with any telephone subscriber in France and other European countries, on payment of a surtax of approximately 3s. above the ordinary cost of the call. A description of this radio-telephony service was given in our March 27 issue.

Sheffield Steel Products Limited.—The directors of Sheffield Steel Products Limited have outlined in a circular to shareholders their reasons for accepting the recent offer of 12s. 6d. a share made by Gloucester Railway Carriage & Wagon Co. Ltd. Trading in the last financial year ran, they state, at a lower level than the previous year due largely to a lower demand and greater competition. The accounts have not yet been completed but net profits, after all charges, except tax, are likely to be about £180,000, against £268,000 previously. In the current year they feel it may well prove difficult to maintain even last year's results. An interim dividend of 15 per cent has been declared. This is to be the only payment in respect of the year ended March 31, 1959.

British Standard Code of Practice for Earthworks.—A new British Standard publication, Code of Practice CP.2003, earthworks, was prepared by a drafting committee convened by the Institution of Civil Engineers. It deals with earthworks in connection with civil engineering work, but not with such specialised types as tunnels, dams, dykes, canals, dredging, and river training works. General advice is given on such matters as soil classification, weather conditions, and the economic aspects of earthwork design. There is full guidance on the design, drainage, and construction of cuttings and embankments and of shallow cut-and-fill and com-



One of the four-car Derby-built suburban diesel trains for the London Midland Region showing new four-digit route indicator

paction earthworks. A substantial section of the code is devoted to trenches, pits and shafts. Excavation, timbering, back filling, also blasting, and excavation in rock, are fully covered and there are 28 illustrations. Although the code is based on conditions likely to be met in the British Isles, a few references have been made to those overseas. Copies, price 25s., may be obtained from the British Standards Institution, 2, Park Street, London, W.1.

D.S.I.R. Technical Digests.—Department of Scientific & Industrial Research technical digests will be available again in the near future. The digests will be published monthly. The annual subscription will be £3 3s. for sets of 15 items per month. A reduction will be offered for quantity supplies. The initial circulation of 15 digests will consist of: 1 "Fatigue Strength of Pin Joints," 2 "Simple Smoke Density Indicator," 3 "Provision of a Dust-free Atmosphere," 4 "Portable Power Point," 5 "Round Aperture Valve," 6 "Simple Non-electrical Thermostat," 7 "Approach Warning System," 8 "Angular Coupling for Rotating Shafts," 9 "Midget Hoist," 10 "Atmospheric Dust-Sampling Instrument," 11 "Skirting Wiring Duct," 12 "Fabric Tanks for Transporting Liquids," 13 "Trailing Lead on Machine Tools," 14 "Brushless Alternator," and 15 "Simple Inspection Aid."

Eastern Region Carnival Display.—British Railways, Eastern Region, has produced a display unit to represent it in carnival processions at selected places throughout the summer. The theme of the display is electrification. The message "Electrification is on the way" with an impression of an electric train appears in the top half of the unit. The lower half carries six framed posters of East Coast resorts glazed to make them weather-resistant. The predominant colours are blue and white, with splashes of red and yellow. The unit is permanently mounted on a trailer with a seat at the back for attendants. When not in use it can be collapsed and enclosed in an outer casing of aluminium sheet for transport. It is to appear in carnivals at Worksop (June 6), Romford, Dagenham, Dronfield, Doncaster, Debden, and Southend. The unit was constructed by A. Costa (Contracts) to the basic design of the Public Relations & Publicity Officer, Eastern Region.

Eastern Region publicity unit

Wilmslow and Sandbach Power Boxes Completed.—Sandbach power signalbox and the new colour light signalling controlled from it will be brought into use on June 8, and a similar box at Wilmslow will go into service on June 29. Both are on the Crewe-Manchester line of the London Midland Region, now being electrified at 25 kV. The two boxes between them will control 27 route-miles of a total of 40 route-miles between Crewe and Manchester, and replace 12 mechanical boxes. The lines have been completely re-signalled.

Sealanco (St. Helens) Limited Joins Expandite Group.—Expandite Limited, manufacturers of sealing compounds, jointing and weather-proofing materials, and anti-corrosive treatments, announce that they have acquired the whole of the share capital of Sealanco (St. Helens) Limited, manufacturers of putties, mastics, glazing compounds and adhesives.

London-Birmingham Coach Service via Motorway.—The Chairman of the Birmingham & Midland Motor Omnibus Co. Ltd., Mr. J. S. Wills, referred at the recent annual general meeting to the express motorcoach service which his company is to operate between London and Birmingham via the new motorway. The road is expected to be opened in the autumn. Mr. Wills stated that the service would run three times daily in each direction, and the journey time between the two cities will be cut from 5 hr. 23 min. for the existing Birmingham-London motorcoach services to 3 hr. 25 min. Specially modified coaches were in course of preparation.

B.S.A. Dividend.—The interim ordinary dividend of the Birmingham Small Arms Co. Ltd. remains unchanged at 3 per cent.

Crompton Parkinson Limited Results.—The interim ordinary dividend on the ordinary stock of Crompton Parkinson Limited is to be maintained at 5 per cent.

Report of National Physical Laboratory.—The recent reorganisation at the National Physical Laboratory and the consequent new trends in its research work are outlined in the annual report for 1958. The replacement of three of the old divisions by the new divisions of applied physics, basic physics and standards has enabled the Laboratory to plan research into new fields. The new Basic Physics Division is equipping itself to begin work mainly devoted to the relation between the macroscopic properties of materials and their structure on a molecular scale. In the Applied Physics Division, work has begun on radio-carbon dating and a national centre for neutron source standardisation is being formed. A new item in the Standards Division is the accurate determination of the gyromagnetic ratio of the proton which will open the way to precise measurement of strong magnetic fields and hence to the accurate determination of a number of important fundamental constants.

New Cargo Vessel for Channel Islands Service

(*See our May 29 issue*)

Mrs. Valentine, wife of Mr. A. B. B. Valentine, Member, British Transport Commission, launching mv. "Moose" at the Brooke Marine Yard, Lowestoft, on May 25. On the right are Mr. H. C. Johnson, General Manager, and Mr. W. G. Thorpe, Line Traffic Manager, Great Eastern, British Railways, Eastern Region

Road Transport Education in 1958.—The 13th annual report of the National Committee on Road Transport Education, states that enrolments for studying during the 1958-59 session for the Royal Society of Arts, road transport examinations, have remained fairly steady except in the London area where there has been a marked reduction, due probably to the bus strike which coincided with the enrolment period. The steady decline in the number of London Transport staff taking the examination has continued. In contrast, students from passenger companies have steadily increased until now they form the largest single block of candidates.

Material Compositions Standardisation in U.S.A.—The National Bureau of Standards at the United States Department of Commerce, Washington, D.C. supplies more than 550 standards of metals, ores, ceramics, chemicals, hydrocarbons, and radioactive materials. About 250 of the standard samples are of certified chemical composition ; some 100 of these have been prepared specifically for use in spectroscopic analysis. Other standard materials include those certified for such properties as acidity, viscosity, melting point, density, index of refraction, and heat of combustion. More recently, a number of radioactive materials, uranium isotopes, lithium ores, aluminium refractories, and phosphor materials have been added. Some of the principal uses of N.B.S. standard materials are : checking analytical methods ; standardising solutions for volumetric analysis; developing new or improved methods of analysis ; and calibrating and standardising laboratory and plant instruments.

Scottish Cables Limited Link with B.I.C.C. Group.—The directors of both British Insulated Callender's Cables Limited (BICC) and Scottish Cables Limited have decided that a unification of their interests is desirable. Accordingly B.I.C.C. has made offers to acquire the whole of the issued capital of Scottish Cables Limited on an exchange of shares basis. The ordinary shares in B.I.C.C to be allotted will not participate in the final dividend of 9½ per cent which has been recommended for 1958. In the event of the offers becoming unconditional Scottish Cables Limited will continue under its own name as a separate entity within the B.I.C.C. Group. Mr. William Fraser will continue to hold the office of Chairman and Managing Director, and he will be invited to join the B.I.C.C. board. The entry of Scottish Cables Limited into the B.I.C.C. Group should provide additional strength and give the Group a modern plant in Scotland. Also it will bring into the Group a majority holding in Scottish Cables (South Africa) Limited which should provide a valuable link with the other Group interests in Southern Africa. Other benefits which can accrue from the link-up include a valuable co-ordination of research and development effort and some rationalisation of production and sales.

Pressed Steel Co. Ltd.—The board of the Pressed Steel Co. Ltd. has recommended payment of a final ordinary dividend of 17½ per cent less tax, for the year ended December 31, 1958. Mr. Alex Abel Smith, Chairman, in his statement referred to the building by the company of railway rolling stock. The Linwood factory, he stated, again showed satisfactory results. The original order for utility vans for British Railways was completed during the year, but a follow-on order was received for an additional number. Work on the passenger coaches required in connection with the Glasgow suburban electrification scheme has proceeded satisfactorily and the first train was about to be delivered. Production of wagons of various types continued, but at a reduced tempo. As for the Railway Equipment Division, the outlook was less clear. In the home market much depends on the tempo of the railway modernisation programme. The company had a substantial order for diesel railcar units, and was tendering for other passenger coach equipment. In the wagon field, it had secured orders for limited quantities of different types, but the fact must be faced that the Commission's wagon building programme had for the time being, reached virtual completion; this not only meant less business, in view, but stiffer competition for such business as offered from time to time. Export markets for railway equipment were difficult. He recently had completed a business tour which included India and Australia, two countries to which in the past they had sold railway equipment. In both it was clear that a determined effort was being made to attain self-sufficiency. In the meantime, competition from Japan had to be reckoned with.

Forthcoming Meetings

June 5 (*Fri.*).—The Railway Club, at the Royal Scottish Corporation, Fetter Lane, London, E.C.4, at 7 p.m. Paper on "The History of the Railway Club," by Mr. B. D. J. Walsh.

June 6 (*Sat.*) to June 11 (*Thu.*).—Permanent Way Institution. 75th Anniversary Convention in London.

June 16 (*Tue.*) to June 25 (*Thu.*).—Institute of Transport. Continental visit to Denmark.

June 17 (*Wed.*).—Institution of Civil Engineers, at Great George Street, Westminster, S.W.1. Conversazione.

June 20 (*Sat.*).—Permanent Way Institution, Leeds & Bradford Section. Visit to B.T.C. Engineering Research Laboratories, Derby.

June 25 (*Thur.*).—The Model Railway Club, at Caxton Hall, Westminster, S.W.1, at 7.45 p.m. Paper on "The Tralee & Dingle Railway," by Mr. P. B. Whitehouse.

June 26 (*Fri.*).—Permanent Way Institution, East Anglia Section. Visit to Taylor Bros. (Sandiacre) Ltd., Nottingham.

June 27 (*Sat.*).—Permanent Way Institution, London Section. Visit to Meldon Quarry, near Okehampton, Southern Region.

Railway Stock Market

Strong and active conditions again persisted in stock markets with recorded dealings reaching a new high record level and main buying interest still centred on industrial shares. Sentiment continued to be helped by the many indications of improved industrial activity, and also by financial results showing higher dividends, which are regarded as an indication of confidence in the outlook. Take-over developments have attracted considerable attention, as they seem to show that the trend to bigger units in industry is likely to be accelerated.

There was only a small amount of business passing in foreign rails which, however, were generally well maintained in price. Antofagasta ordinary and preference stocks were 12⅜ and 24 respectively, while the 4 per cent perpetual debentures were 35½ and the 5 per cent (Bolivia) debentures 86. Business around 13½ was recorded in Costa Rica ordinary stock; the 6½ per cent first mortgage debentures were 74½. Chilean Northern 5 per cent first debentures were 58½, Brazil Railway bonds 5½, and Guayaquil & Quito assented bonds 82½.

International of Central America common shares and preferred stock were $22½ and $111½ respectively. Paraguay Central prior debentures were quoted at 11.

Mexican Central "A" bearer debentures strengthened to 59. Elsewhere, San Paulo Railway 3s. units firmed up from 1s. 7½d. to 1s. 9d. United of Havana income stock was again 6 and the consolidated stock 1.

Canadian Pacifics at $53½ were virtually the same as a week ago, the 4 per cent preference eased fractionally to 53½ and the 4 per cent debentures to 63¼. White Pass shares kept at $15.

Nyasaland Railways shares held steady at 13s. 9d. with the 3½ per cent debentures 60½. Midland Railway of Western Australia ordinary stock was quoted at 5½ and the income debentures at 10½. West of India Portuguese capital stock kept at 106 and the 5 per cent debentures at 91½. Barsi ordinary stock was quoted at 24.

Among shares of engineering and kindred companies, North British Locomotive again improved, and at 12s. 3d. compared with 11s. 3d. a month ago, but after last week's rally, Beyer Peacock 5s. shares came back a few pence to 7s. 6d. and Charles Roberts 5s. shares have been less firm at 12s. 6d.

Gloucester Wagon 10s. shares were 18s. 6d. and Wagon Repairs 5s. shares 9s. 9d. G. D. Peters remained at 25s. after the chairman's cautious remarks in his annual statement. Westinghouse Brake have been well maintained at 43s. 6d. and in other directions, Birmingham Wagon shares at 20s. 9d. have been well maintained. Associated Electrical were 62s. 3d., English Electric 67s., General Electric 34s. 9d. and Crompton Parkinson 5s. shares 14s. 6d. B. I. Cables were 55s. 6d. and Johnson & Phillips 26s. 6d. Edgar Allen shares have changed hands around 31s. 9d. Clarke Chapman came back to 50s. 9d.

T. W. Ward have been a good feature with a fresh rise from 91s. 9d. to a peak of 95s. A.C.V. shares have risen from 47s. 6d. a week ago to 49s. 3d. and Leyland Motors from 54s. to 56s. British Timken were 83s. and Ransome & Marles 5s. shares rose from 18s. 9d. to 21s., Head Wrightson 5s. shares rose again from 28s. to 28s. 7½d. Guest Keen have been firm at 63s. 7½d., awaiting the chairman's annual statement. Tube Investments were 89s. and Renold Chain shares 49s. 1½d. Dowty Group 10s. shares rose afresh from 41s. 3d. to 42s. 3d. Pressed Steel 5s. shares were little changed on balance at 28s. 6d.

OFFICIAL NOTICES

RAILWAY TURNTABLE. For sale, Mundt type standard gauge turntable, 65 ft. long, carrying capacity 150 tons approx. WATER CRANE, 3,000 gallon Water Crane. TURNOUTS. Tweyt 1 in 8 Turnouts in 75 lb. F.B. rail; interchangeable to suit L.H. or R.H. All these items are in excellent condition. Apply Eagre Construction Co. Ltd., East Common Lane, Scunthorpe, Lincs. 'Phone: 4513.

NEW ZEALAND GOVERNMENT RAILWAYS DEPARTMENT. Tenders are being invited by the Railways Department of the New Zealand Government for the manufacture and supply of 500, 600 or 700 Steel Box Wagons Class 'Kc,' 3' 6" gauge.

Tenders are due to close in New Zealand on 29th July, 1959.

Application for tender documents should be made to:—The Chief Purchasing Officer, New Zealand Government Offices (C/F.99/2531), Adelphi Building, John Adam Street, London, W.C.2.

Tender documents and Conditions of Contract will be supplied free, but a charge of £50 (not refundable) will be made for a complete set of drawings.

BRITISH RAILWAYS Accountant's Department has a vacancy for a Costs Investigator at Derby. Successful applicant to be responsible for conducting investigations and reporting on claims arising on contracts. Thorough knowledge of Accounting and Costing essential and Costs and Works Accountancy qualifications an advantage. U.K. travelling involved.

Salary £900/£1,000 with prospects of promotion. Contributory pension fund subject to medical fitness. Sick pay, travelling facilities, etc.

Application giving details of age, qualifications and experience to Regional Accountant, London Midland Region, British Railways, Euston Station, London, N.W.1, reference P.S.3851/19.